

**WASHINGTON STATE
DIVISION OF ALCOHOL AND SUBSTANCE ABUSE
18-MONTH ADOLESCENT OUTCOMES
REPORT**

August, 1997

**Prepared by:
New Standards, Inc.
St. Paul, MN**

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EXECUTIVE SUMMARY

This report presents outcome findings on adolescents who received chemical dependency treatment from facilities in the State of Washington. This document extends the scope of the previous one-year outcome report to evaluate outcomes out to 18 months after treatment. Both post-treatment vs. pre-treatment changes in client functioning are analyzed (year before treatment vs. year prior to 18-month follow-up contact, n=475), as well as certain changes in patient status at four discrete points in time - at intake, then at 6-, 12-, and 18-month follow-up contact points (n=375). Results are presented separately for inpatients and outpatients, though inpatient results are emphasized, as inpatients comprise over three-fourths of the 18-month follow-up sample.

Adolescents in the Division of Alcohol and Substance Abuse (DASA) sample were evaluated for their clinical profiles for addiction and other coexisting problems. The findings suggest a relatively impaired population with multiple addictions and other coexisting problems. The sample exhibits severity levels comparable to adult clinical populations. Among the highlights of the findings are the following:

Abstinence:

- Among adolescents contacted at 6, 12 and 18 month follow-up points, the contiguous abstinence rate (full abstinence the entire 18-month period) was 14%, for inpatients, and 23% for outpatients. However, these percentages likely underestimate the proportion of clients "in recovery" because:
- Much higher proportions of both inpatients (41%) and outpatients (51%) have been abstinent for at least the most recent six months prior to 18-month follow-up contact;
- Over one-third of the inpatients (37%) and two-fifths of outpatients (41%) reported at least 15 months of total abstinence out of the 18 months after treatment;
- The number of substances used, an indicator of severity of abuse, dropped in half for inpatients, from 5.0, before, to 2.4, after, chemical dependency treatment. Outpatient results were comparable.
- Differences in abstinence rates between inpatients and outpatients were a reflection of greater inpatient severity on such dimensions as polydrug involvement, familial and peer chemical involvement, depressive symptomatology, and abuse histories.

Level of Functioning: Improvements in client functioning were indicated by declines in medical utilization, school and work problems, and legal involvement, subsequent to chemical dependency treatment:

- The extent of both routine and emergency hospital and outpatient medical care declined when the year before treatment was compared to the year prior to 18-month follow-up contact. For example, for inpatients, the average number of emergency room visits dropped from about one per client (1.08) before treatment, to about one-half (.58) per client, after treatment. In addition, the average number per inpatient of medical outpatient visits for injuries decreased by half, from 1.82 to .89.
- Rates of psychiatric problems declined after treatment, even though rates of psychiatric care decreased, rather than increased. The incidence of major depressive syndromes among inpatients dropped from 43% the year before treatment, to 26% the year before 18-month follow-up; suicide attempt rates dropped from 21% to 7%, while rates of outpatient psychiatric care also declined from 12% to 3%. As described earlier, these reductions in psychiatric problems cannot be attributed to psychiatric treatment.
- Accompanying the decreases in medical utilization and psychiatric problems was a trend for clients to increase their favorable subjective ratings of their own physical health, mood, and life satisfaction over time, especially after treatment.
- Adolescents' ability to function effectively in school and work settings improved significantly after chemical dependency treatment. For example, among inpatients, the percentage of adolescents involved with any school disciplinary action plunged from 88% the year before treatment to 38% the year prior to 18-month follow-up contact. Rates of specific school disciplinary actions such as being sent to the principal, being suspended, expelled, or involved in a family conference all declined by over 60%. In addition, the proportion of Ds and Fs as school grades dropped sharply after treatment, while As and Bs rose correspondingly.
- For inpatients with full- or part-time employment, the extent of absenteeism, tardiness and poor performance was greatly reduced after treatment.
- While rates of job employment as an income source did not surge strikingly after inpatient treatment (from 44% at intake to 52% at 18-month follow-up), the rate of illegal behavior (such as drug dealing, theft, prostitution) as an income source plunged dramatically from 58% pretreatment to 10% by the 18-month contact point. Outpatient findings were similar.

- Increased ability to function within societal constraints was indicated by drops in legal involvement after treatment: among inpatients, the arrest rate declined from 67% the year before treatment to 35% the year before 18-month follow-up. Similarly, both the average number of misdemeanor arrests and felony arrests per client decreased substantially (2.4 pretreatment misdemeanor arrests per inpatient vs. .4 post-treatment; 1.2 pre-treatment vs. 3 post-treatment felony arrests). Outpatients also showed reductions in legal involvement, though their rates were already lower than those of inpatients prior to treatment.
- These reductions in medical utilization, legal involvement, and school/work problems can all be associated with tangible dollar savings, which arguably provide a dramatic “cost-offset” to the initial cost of chemical dependency treatment.

Predictors of Abstinence: Several variables were analyzed for their association with abstinence, including pretreatment chemical use, demographics, treatment program factors, and continuum-of-care dimensions. Noteworthy findings include:

- Females had roughly comparable “extended recovery” rates (defined as abstinence in at least 15 of 18 months posttreatment) whether in coed or gender-segregated facilities (43% vs. 48%, respectively), but males had much worse recovery rates when in coed facilities (43%, gender-segregated, vs. 21%, coed).
- Overall recovery rates generally increased with increasing inpatient length-of-stay: 33% recovery rate for adolescents in treatment 0 to 14 days, 32% for those in treatment 15-28 days, 35% for clients in treatment 29 to 35 days, and 43% for those in treatment over 35 days. Paradoxically, intensity of outpatient care showed the opposite relationship to abstinence.
- Parental participation in treatment did not directly predict adolescent abstinence, but was strongly associated with client treatment completion rate, which itself is correlated with client abstinence.
- Client ratings of inpatient treatment helpfulness had a direct and consistent relationship to outcome, varying from a 7% extended recovery rate for clients who said treatment helped “not at all” up to 48% among adolescents who said treatment helped “a great deal.”
- Most inpatients (85%) were satisfied with their treatment overall; these adolescents had significantly higher extended recovery rates (41%) than inpatients who were not satisfied with their overall treatment (16%). However, levels of satisfaction with most of the specific treatment components were not strongly associated with outcome.

- Though the number was relatively small, inpatient clients who completed program aftercare anytime during the 18-month posttreatment period had extended recovery rates over twice as high as those who were still involved in or did not complete, aftercare (66% vs. 30%, respectively).
- Participation in Alcoholics/Narcotics Anonymous was the aspect of the post-treatment continuum-of-care which was most strongly correlated with abstinence. AA attendance at a specific follow-up contact point best predicted current abstinence status at that point in time, rather than at earlier or later times.
- Pre-treatment chemical use predicted outcome, in terms of number of substances abusing or dependent on, rather than the specific substance dependent on: inpatients who abused or were dependent on four or more substances had extended recovery rates appreciably lower than those who abused or were dependent on only one substance (33% vs. 48%, respectively).
- The lack of strong association between demographic variables and outcomes suggest that post-treatment factors such as continuum-of-care involvement are more powerful predictors of recovery status than pretreatment variables.

Conclusions:

- It is important to note that the one year findings of significant reductions in medical utilization, school discipline problems, and legal involvement were maintained; there was little evidence of "slippage" toward pretreatment levels.
- Adolescents in the Washington state inpatient and outpatient samples obtained measurable benefits associated with chemical dependency treatment.

INTRODUCTION

This report presents an outcome evaluation on adolescents who received chemical dependency treatment (in inpatient as well as outpatient settings) and provided outcome data typically up to 18 months after intake. In addition to abstinence in terms of chemical use, other measures of outcome related to client level of functioning will be presented. The aspects of functioning which will be evaluated for posttreatment vs. pretreatment changes include health status (in terms of medical utilization), school and work functioning, and legal involvement. The relationship between various pretreatment and treatment process parameters and outcome will also be explored. This report furthers the findings of the previous report, which presented one year outcomes, over a more extended posttreatment interval - 18 months after treatment. Thus, one can assess whether one-year posttreatment results continue to be maintained into the second year after treatment.

The current study sample was drawn from an initial overall sample of 1,212 adolescents who were admitted to chemical dependency treatment facilities in the state of Washington between March, 1993 and December, 1995, and were eligible for 18-month post-discharge follow-up contact. Of this group, history information was provided by 1,155, and discharge data was available on 1,018. Follow-up contact was attempted whether or not the client completed treatment. At the first contact point, three months after treatment, 910 adolescents were contacted and provided outcome data; at six months after treatment, 792 clients were successfully contacted and gave outcome data; at 12 months after treatment, 710 were contacted and yielded outcome information; and, at the final contact point, 18 months after treatment, 583 adolescents provided outcome data.

For this report, different sample sizes were used, depending on the type of data analysis conducted. Of the 710 adolescents with outcomes at 12-month contact and 583 with outcomes at 18-month contact, 475 were contacted at *both* 12- and 18-month follow-up points; they comprise the primary sample for this report, for whom one-year posttreatment vs. one-year pretreatment differences in functioning were assessed. Four of the patients in this follow-up sample did not have an outpatient or inpatient designation; they were excluded from the analyses, which are presented separately according to inpatient or outpatient setting. Therefore, most analyses are based on maximum sample sizes (sample sizes may vary sizably across tables because of missing data on the variable of interest) of 366 inpatients and 105 outpatients. Since inpatients comprise over three-fourths of the entire follow-up sample (78%), their results are emphasized in this report.

Of interest is the issue of whether patient status after treatment, for example, extent of legal involvement, changes from pre-treatment levels. Most level of functioning measures assessed at intake reflect client status for a one-year period prior to treatment (e.g., "number of misdemeanor arrests in the past year"); post-

treatment measures must, therefore, refer to the same length of time (e.g., "number of misdemeanor arrests in the year after treatment), to allow legitimate contrasts to be made. For this report, then, data from 12-month and 18-month follow-up contact points, each of which had level of functioning measures pertaining to the previous six month period, were combined to generate year-long posttreatment measures, the year prior to 18-month contact (e.g., "number of misdemeanor arrests in the one year period just prior to 18-month follow-up contact).

A second sample was used for an analysis of selected trends over time. Certain measures of current status (e.g., "source of income," "under supervision of a probation officer") were compared at four discrete points in time: 1) intake, 2) 6-month follow-up contact point, 3) 12-month follow-up, and 4) 18-month contact. To be included, clients had to provide data at all four contact points; this resulted in a total sample size of 396, somewhat lower than the one-year post-treatment vs. pretreatment sample of 475; therefore, trend analysis findings should probably be considered more cautiously than one-year post-treatment vs. pre-treatment results. In general, the extent of sample dropout or attrition, though not unexpected, is a reminder for readers to be careful in generalizing findings from either sample to the general population of adolescents entering chemical dependency treatment in the state of Washington.

TREATMENT OUTCOME: ABSTINENCE

Abstinence is the most universal outcome measure for addictions treatment in general. However, total posttreatment abstinence (defined as no chemical use at all) is arguably an overly conservative or strict criterion by which to gauge the effectiveness of treatment. This report will view abstinence, or recovery status, from different vantage points to hopefully better represent client posttreatment chemical involvement, as well as utilize data on patient functioning as additional measures of outcome.

Recent Abstinence: At the 6-, 12- and 18-month follow-up contact points, clients were queried on the frequency of their chemical use for the past six months (see Table 1). At the 18-month follow-up, 41% of the 451 contacted adolescent inpatients, and 51% of the 127 outpatients, reported no chemical use in the previous six-month period. These rates of recent abstinence prior to the 18-month follow-up contact compare favorably to the corresponding percentages obtained at 6-month contact (36% of inpatients and 44% of outpatients abstinent) and 12-month contact (38% of inpatients and 42% of outpatients abstinent the most recent six months). Thus, at any of the three contact periods, up to one-and-a-half years after chemical dependency treatment, well over one-third of inpatients and over two-fifths of outpatients reported zero substance use within the most recent six months.

The previous report presented abstinence for the first year after treatment. This report, using data from the 18-month contact as well, can present abstinence for the one-year period prior to the 18-month follow-up (i.e., from 6 to 18 months after treatment): the abstinence rate for the year prior to 18-month contact for inpatients was 24%, which closely resembles the abstinence rate of 22% for the first year after treatment. The pattern of results for outpatients was comparable, in that extent of abstinence in the year prior to 18-month follow-up (30%) was similar to the rate of abstinence in the year prior to 12-month follow-up (29%).

Contiguous ("Overall") Abstinence: The contiguous abstinence rate refers to the percentage of adolescents who report complete abstinence for the entire 18-month posttreatment interval. This requires client contact at all three (i.e., 6-, 12- and 18-month) follow-ups, reducing the inpatient follow-up sample size to 301 and the outpatient sample size to 91. As shown in Table 1, one in seven (14%) adolescent inpatients, and nearly one in four (23%) outpatients, reported complete abstinence for the entire 18 months after treatment.

Table 1 also reveals that, regardless of abstinence measure used, outpatient rates consistently exceed those of inpatients. This does not necessarily mean outpatient programs are more effective; indeed, as shown in the next section, pre-treatment client differences in severity may explain the disparity in abstinence rates.

Inpatient vs. Outpatient: The follow-up sample consists of adolescents who entered both inpatient and outpatient chemical dependency treatment programs. The vast majority, roughly three out of four, were treated on an inpatient basis. The difference in abstinence rates between adolescent inpatients and outpatients is real, but it may reflect differences in patient severity rather than in program efficacy. Since inpatient treatment involves a higher and more restrictive level of care than outpatient, it should be associated with greater client severity in terms of chemical use and co-occurring problems. The analyses in the previous report on one-year outcomes (New Standards, Inc., 1997) suggested that this was indeed the case, and inspection of data on the current 18-month follow-up samples leads to the same conclusions.

Table 2 shows that adolescents who were treated on an inpatient basis had greater levels than outpatients of daily alcohol (23% vs. 11%), daily marijuana (48% vs. 33%), and crack cocaine use, greater familial and peer chemical involvement, higher rates of childhood physical and sexual abuse, and higher rates of such psychiatric problems as depressive symptom clusters, and incidents of self-mutilation or suicide attempts in the year before treatment. Finding such differences in patient severity between inpatient and outpatient program types suggests that placement into either level of care is not an arbitrary or subjective decision, but takes clinical considerations into account.

Abstinence/Relapse Pattern: The contiguous or overall 18-month abstinence rates of 14% (inpatients) and 23% (outpatients) may underestimate the proportion of clients who are on a positive recovery trajectory since they do not take into account *recent* abstinence or *pattern* of recovery. For example, adolescents who have been abstinent the past six months, or one year just prior to 18-month follow-up contact may have relatively favorable prognoses, even if they relapsed before that period. Yet an analysis of strict 18-month contiguous abstinence rates would place them in the same “non-abstinent” category as adolescents who relapsed before every consecutive contact point, clients who arguably have poorer prognoses.

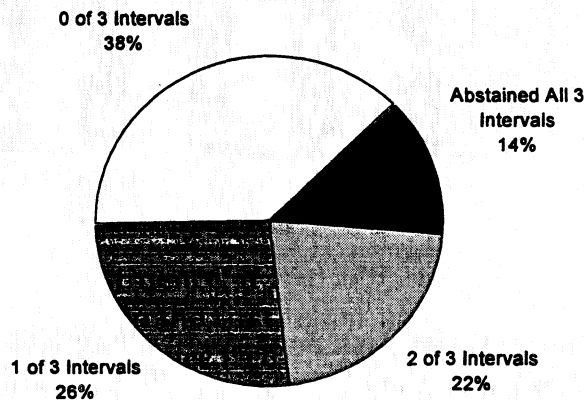
Taking into account the three post-treatment contact points (6-, 12-, and 18-month follow-ups) and two abstinence categories (abstinent vs. relapsed) at each contact point, there are eight different possible combinations or patterns of recovery. Table 3A shows that, in addition to the 14% of inpatients with contiguous (full 18 months) abstinence, another 27% of clients had recovery patterns which included six months of abstinence prior to 18-month contact, and 6% of adolescents relapsed in the six months before the 18-month follow-up, but reported full abstinence for the full year prior (months 0 to 12 after treatment). Less than two-fifths (38%) had zero 6-month periods of abstinence in the first 18 months after treatment (this pattern of relapsing in each of the three follow-up periods could be labeled “contiguous relapse”).

Though the contiguous abstinence pattern is undoubtedly the most favorable (14% of inpatient clients), and the contiguous relapse pattern the most unfavorable (38%), the other recovery patterns undoubtedly have various degrees of desirability and prognostic value. For example, adolescent inpatients who have been abstinent the most recent six months before 18-month contact, and have had one other six month period of full abstinence (16% of the sample), could be considered to have promising recovery “trajectories”. Similarly, the clients who relapsed in the six months before 18-month contact and also relapsed in one other six month period (15%) could be regarded as unfavorably disposed towards a healthy recovery.

The patterns of abstinence for outpatients are similar to that of inpatients, even though the contiguous abstinence rate is higher. For example, in addition to the 23% of outpatients who report contiguous (full 18-months) abstinence, an additional one-third (33%) have a pattern which includes abstinence in the most recent 6-month period just prior to 18-month follow-up contact. Less than one-third (31%) of the outpatients could be considered to have a “contiguous relapse” pattern of relapsing in each of the three post-treatment follow-up periods.

Besides the pattern of abstinence, it is also possible that the simple *number* of six-month periods of abstinence in the first 18 months after treatment (0, 1, 2, or 3) is a good predictor of long-term abstinence (see Figure 1). Over one-third of the inpatient adolescents (36%) reported full abstinence in either two or three out of the three six-month post-treatment intervals. Those patients arguably have a more favorable long-term prognosis than the 38% of inpatients who abstained in zero of the three follow-up periods, or the 26% who abstained in only one of the three six-month post-treatment intervals.

Figure 1. Number of Six-Month Intervals With Full Abstinence at 18-Month Follow-Up: Inpatients (n=301)

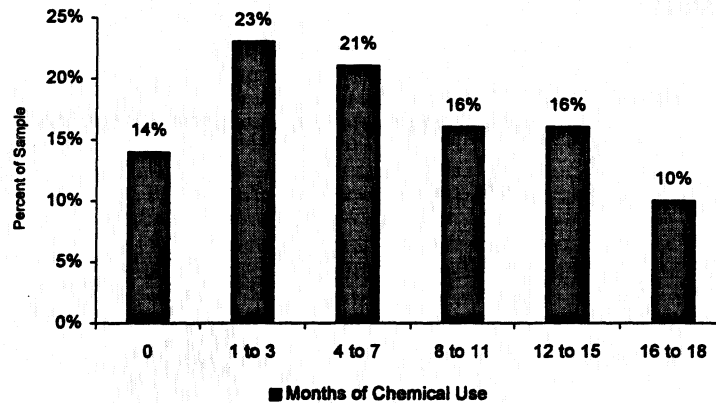


Among outpatients, in addition to the 23% with contiguous abstinence, 18% reported full abstinence in two of the three six-month follow-up periods. These 41% of the outpatients could be considered to have a more favorable prognosis than the 31% of outpatients who were “contiguous relapsers” or the 28% who relapsed in two of the three six-month post-treatment follow-up periods.

Number of Months of Use: One can also examine outcomes according to the total number of months in the 18 months after treatment in which the adolescent reports chemical use (see Tables 4A and 4B and Figure 2). On average, the adolescent inpatients reported chemical use in approximately 7 of the 18 months after treatment, and abstinence for 11 of the 18 months post-treatment (see Table 4A). In addition to the 14% of inpatients who reported zero months of post-treatment chemical use (full abstinence), close to one-fourth (23%) reported substance use in three or less of the 18 months post-treatment (actual frequency and average quantity of use were unavailable for assessment); these 37% of adolescents, who had at least 15 or more months of post-treatment abstinence out of 18, could reasonably be classified as having “favorable” recovery paths. Conversely, the inpatients who had 12 or more months of chemical use out of 18 (26%) should be regarded as having “unfavorable” recovery prognoses. Finally, the remaining adolescents (substance users in 4 to 11 of

the 18 post-treatment months) would be considered to have an “uncertain” or “mixed” abstinence pathway (37% of the sample).

Figure 2. Distribution of Number of Months of Chemical Use Within 18 Months After Inpatient Treatment (n=301)



Adolescent outpatients, on average, used chemicals in about 6 of the 18 post-treatment months, and abstained in 12 of the 18. In addition to the nearly one-fourth (23%) who abstained the entire 18 months, 18% abstained in at least 15 of the 18 months after treatment. These 41% of outpatients are classified as having “favorable” prognoses; conversely, the 18% who relapsed in at least 12 of the 18 post-treatment months can be considered to have an “unfavorable” recovery trajectory, while the outpatients with between 4 and 11 months of relapse out of 18 are regarded as having “uncertain or mixed” abstinence outcomes (see Table 4B).

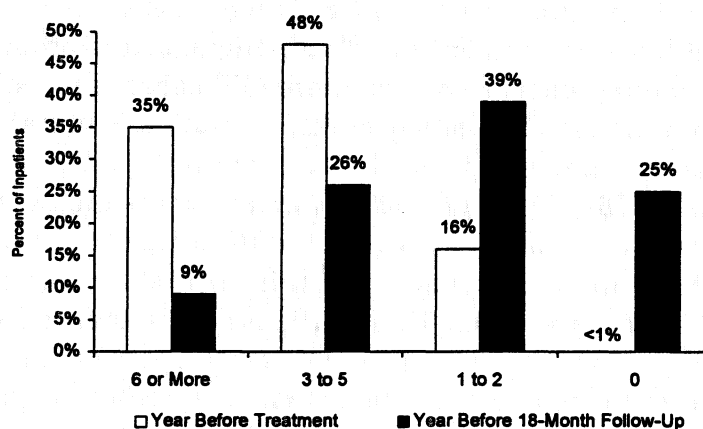
One can easily conclude, given the findings on recent abstinence, recovery pattern, and number of months of use, that up to one-third or more of the inpatient clients and up to two-fifths of outpatients have achieved periods of post-treatment abstinence extensive enough to merit optimistic recovery prognoses. These outcomes should be considered encouraging in that they apply to *all* adolescents who entered inpatient or outpatient treatment and were contacted at follow-up, regardless of duration of treatment, intensity of treatment, motivation for treatment or discharge status/completion of treatment.

Number of Chemicals Used: As suggested above, complete abstinence is only one indicator of treatment response, and it arguably underestimates the extent to which clients are progressing in their recovery pathways. The current 18-month follow-up data provide direct pre-treatment vs. post-treatment comparisons which indicate that even when total sobriety was not technically achieved by the adolescents, substance

use levels were altered after chemical dependency treatment (see Tables 5A and 5B and Figure 3).

In the year prior to treatment, adolescent inpatients used an average of five different substances. In contrast, these same (matched) adolescents used an average of between two and three chemicals (2.4) in the year after treatment, before the 18-month follow-up contact point. This represents a dramatic decline that is clinically as well as statistically significant. Thus, the number of substances used dropped by half after treatment, compared to the year before. As Figure 3 graphically depicts, extreme polysubstance abuse (6 or more chemicals used) before treatment also showed the most extreme drop after inpatient treatment, from 35% using 6 or more chemicals in the year before treatment, to only 9% using that many substances in the year before 18-month follow-up.

Figure 3. Number of Substances Used Before vs. After Inpatient Treatment (n=353)



Outpatients showed a similar drop in number of substances used after treatment, though their initial levels were lower than those of the inpatients. Outpatients used an average of nearly three different substances before treatment (2.9), less than the average of five among inpatients; however, they also reduced their substance use after treatment, to an average of less than two different substances (1.6), a 45% drop. Likewise, extreme polysubstance use (six or more chemicals) was drastically reduced, from 26% before outpatient treatment, to only 1%, post-treatment.

Providing a context against which to evaluate the above abstinence outcomes is a challenge, based on information gleaned from a large literature review of adolescent drug abuse treatment (Catalano, Hawkins, Wells & Miller, 1990-1991). In addition to numerous research studies using limited samples, Catalano's comprehensive review also described some results from two studies drawing

national samples of treatment programs. One, the Treatment Outcome Prospective Study (TOPS, Hubbard, et.al, 1985) analyzed outcomes of 240 adolescents from publicly funded inpatient and outpatient programs. Unfortunately, in the literature review, outcomes were not described strictly in terms of abstinence vs. relapse, but in terms of substance use frequency, so that TOPS outcomes are not directly comparable with this present study's. For example, it was reported that daily marijuana use for inpatients under the age of 17, who stayed in treatment three months or more, declined from 79.2% in the year before treatment, to 11.8% in the year after; conversely, daily marijuana use actually increased among adolescent outpatients, from 48% to 54%. Weekly use of drugs other than alcohol or marijuana decreased from 82% to 55%, for clients in treatment less than three months.

A second national study, an analysis of the adolescent sample in the National Institute on Drug Abuse-Texas Christian University Drug Abuse Reporting Program (DARP), compared four treatment modalities in abstinence four to six years after treatment (Sells & Simpson, 1979). Unfortunately, instead of overall abstinence rates, results were reported separately for each drug. For example, the percent abstinent from marijuana showed little change in adolescents from inpatient settings (34% abstinent before treatment to 33% abstinent afterwards) but more change from adolescents receiving outpatient treatment (30% abstinent before treatment, 34% after). A third, much smaller study cited in Catalano's literature review, actually involved marijuana dependent adults in a community-based treatment program (Roffman, et.al, 1988). It found that 30 percent of the clients reported complete abstinence from marijuana only for the *month* following treatment. In this light, the abstinence rates from all substances for this present sample of Washington adolescents (i.e., for inpatients, 14% contiguous abstinence for 18 months, 25% abstinence the year before 18-month follow-up, 41% abstinence the most recent six months before 18-month contact; for outpatients, 23% contiguous 18 months abstinence, 31% abstinence the year before 18-month contact, and 56% abstinence six months before 18-month follow-up), appear quite respectable.

Tobacco: The substance tobacco is not a direct focus of treatment, but has obvious health-related implications. Pretreatment use of tobacco was highly prevalent in both inpatient and outpatient adolescent follow-up samples: 86% of inpatients and 79% of outpatients used tobacco before entering treatment. After treatment, tobacco use declined slowly, but consistently, over each follow-up period. For example, 82% of inpatient clients still used tobacco three months after treatment, 82% still used at six months after treatment, 80% still used prior to the 12-month follow-up contact point, and 75% used tobacco prior to the 18-month contact. Outpatients showed a similar trend of very gradually decreasing tobacco use, from 79% pre-treatment, to 67% at 18-month follow-up.

BEYOND ABSTINENCE: OTHER OUTCOMES ASSOCIATED WITH CHEMICAL DEPENDENCY TREATMENT

Abstinence and reduction in chemical use are but one-dimensional measures of chemical dependency treatment effectiveness. They do not depict the changes in *patient functioning* which may occur as a result of treatment. Evidence suggests that chemical dependency treatment is associated with measurable personal and societal benefits. For example, CATOR/NSI analyses of adult chemical dependency treatment programs in the past decade have consistently documented dramatic reductions in work/school problems, medical utilization, and legal involvement after chemical dependency treatment, compared to the same length of time prior to entering treatment. Such post-treatment reductions arguably provide a "cost-offset" for treatment. The "cost" of treatment is more than counterbalanced ("offset") by the measured vocational, medical and legal benefits, which can be correlated with tangible dollar savings. For example, a study by the University of Chicago's National Opinion Research Center of 1,850 adults treated for drug abuse in the state of California in any of 83 programs concluded that every \$1 spent on treatment saves taxpayers \$7, primarily due to reductions in criminal activity and medical utilization (NIDA Notes, 1995). In that specific study, illegal activity declined by two-thirds, while medical utilization also dropped (for example, hospital emergency room admissions dropped by a third).

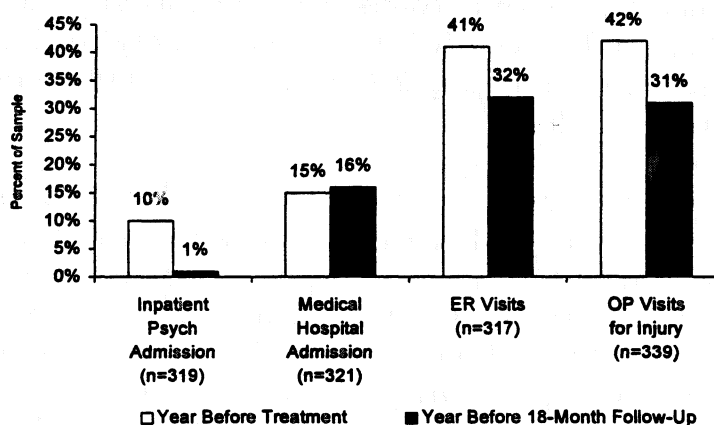
The previous one-year report (New Standards, Inc., 1997) compared outcomes from the year prior to treatment to the first year following treatment. It documented statistically significant post-treatment reductions in medical utilization, legal involvement, and school problems compared to the year before treatment. This current report presents similar findings below, but extends the post-treatment comparison period further out, through 18-months after treatment, yet equates the intervals so that it is still one year of post-treatment data (i.e., from 6 to 18 months posttreatment) that is compared to one year of pre-treatment data. This ensures that comparisons are equitable, since any pre-treatment vs. post-treatment comparisons should refer to the same length of time. Thus, the sample consists of those inpatient and outpatient adolescents who provided data at each of three points in time: 1) intake (on questions referring to functioning in the year prior to intake), 2) the 12-month follow-up contact point (questions on functioning the past six months), and 3) the 18-month follow-up contact point (questions on functioning the previous six months). This yielded maximum samples (the "follow-up samples") consisting of 366 inpatients and 105 outpatients.

Some items on the intake and follow-up interviews query current or recent status. Therefore, some results will represent levels of functioning at four discrete points in time: 1) at intake, 2) at 6-month follow-up contact point, 3) at 12-month

follow-up contact point, and 4) at 18-month follow-up contact point. This allows for a trend analysis over specific points in time of certain variables.

Medical Utilization: Overall medical utilization decreased after inpatient treatment compared with before. As shown in Table 7A and Figure 4, the incidence of hospital-based care declined to a statistically significant extent for emergency room visits, inpatient psychiatric hospitalizations and outpatient visits for injuries. Interestingly, the rate of medical hospitalizations remained flat (15% the year before treatment vs. 16% the year after inpatient treatment, before the 18-month follow-up contact); however, the reduction in emergency room utilization (from 41% of the adolescents pretreatment to 32% after treatment - a decline of over one-fifth) has perhaps greater implications. This is because emergency room care was the most prevalent type of hospital service (over twice as common as a medical hospitalization), and it tends to be cost- and resource-intensive.

Figure 4. Incidences of Medical Service Utilization Before vs. After Inpatient Treatment

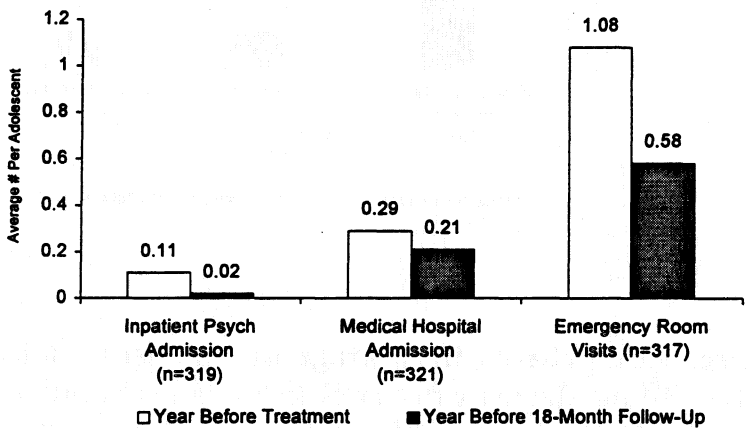


Changes in medical utilization were less pronounced among adolescent outpatients (Table 5B). Trends may have been obscured by the much smaller outpatient sample size ($n < 100$ for most medical utilization variables). Nonetheless, it is encouraging that the extent of ER utilization declined from 32% in the year prior to outpatient treatment, to 26%, in the year just prior to 18-month follow-up contact.

Table 8A and Figure 5 show that not only did a lower proportion of Washington inpatient clients utilize hospital care, but they used hospital care for a significantly lower *average number* of emergency room visits and inpatient psychiatric admissions per person. For example, inpatients averaged just over one emergency room visit (1.08) each in the year before treatment, but averaged just over

one-half an ER visit each (.58 - a decline of close to half) in the year prior to 18-month follow-up contact.

Figure 5. Average Number of Hospital Admissions Per Adolescent Before vs. After Inpatient Treatment



Not only was hospital care reduced after treatment, but outpatient visits for injuries or psychiatric visits, also declined in a statistically significant fashion after treatment (the year before 18-month follow-up), compared to the year before (see Tables 7A and 8A and Figure 6). This was true for both the *proportion of adolescents* using outpatient care (for example, 42% reporting an outpatient medical visit because of an injury before treatment vs. 31% of clients after treatment) as well as for the *average number of outpatient visits* (e.g., the average number of outpatient visits per person because of an injury dropped from 1.82 to .89, a decline of one-half).

Figure 6. Average Number of Outpatient Visits Per Adolescent Before vs. After Inpatient CD Treatment

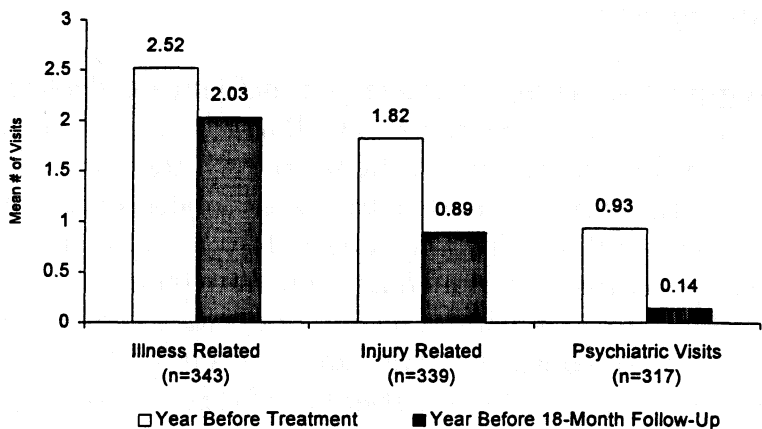
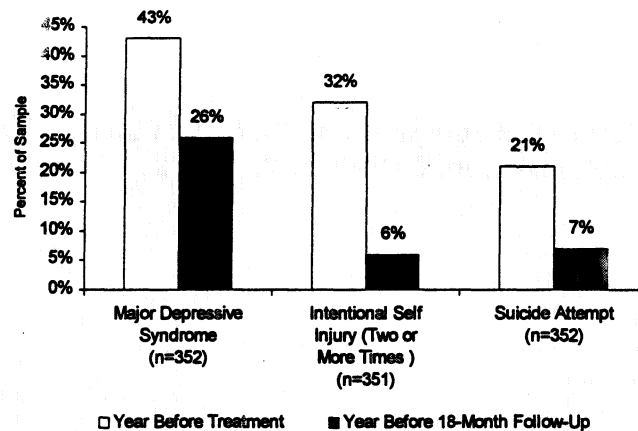


Figure 7. Psychiatric Problems Before vs. After Inpatient CD Treatment



For adolescent outpatients, the average amount per person of inpatient medical service utilization did not decrease to a statistically significant extent, though the average number of ER visits did drop from .66 to .42. Since statistical significance is a direct function of the size of the sample (i.e., it is harder to achieve with smaller samples), it is certainly possible that differences in medical inpatient utilization would be statistically significant among the outpatients if derived from an appreciably larger sample size. Despite the small outpatient sample size, one statistically significant finding did emerge for outpatient utilization: the average number of outpatient visits for illness significantly declined by half, from 1.88 per outpatient in the year before treatment, to .93, in the year just before 18-month post-treatment contact.

Post-treatment reductions in medical utilization may not be solely attributed to the impact of chemical dependency treatment, though other rival explanations are less compelling. Whatever the combination of factors responsible, the declines are "real," substantial, robust (occurring over different types of hospital services - medical, psychiatric, and emergency room), and they reflect a sizable "cost-offset" associated with treatment.

Psychiatric Symptoms: As noted above, the incidence and average number of psychiatric inpatient hospitalizations as well as outpatient visits decreased significantly the year after inpatient chemical dependency treatment, when compared to the year prior. In a similar fashion, the extent of certain psychological or emotional concerns declined (see Table 7A). For example, in the year before treatment over two-fifths (43%) of adolescent inpatients endorsed enough symptoms occurring together over a two-week period to indicate the presence of a major depressive episode. In contrast, for the one-year period before 18-month follow-up, approximately one-fourth of the inpatients (26%) reported the presence of the same

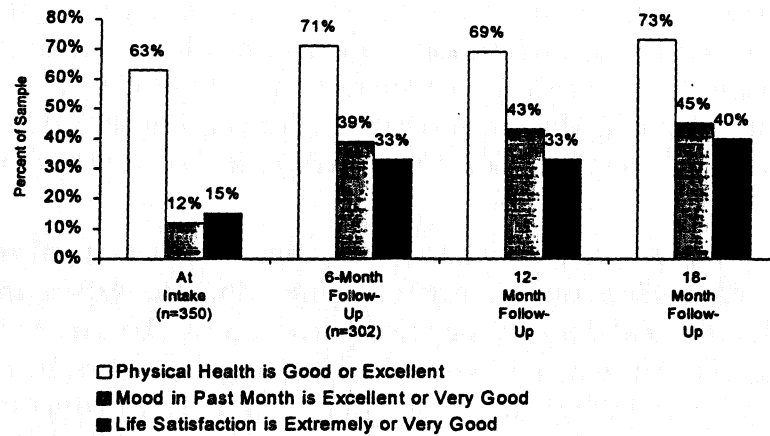
cluster of depressive symptoms. In addition, the percentage of adolescents admitting intentional self-injury (i.e., cuts, bruises, burns) on at least two occasions declined even further, from 32% in the year before treatment to 6% in the year prior to the 18-month follow-up. Finally, the proportion of clients acknowledging an actual suicide attempt dropped by two-thirds, from 21% before, to 7% after treatment (see Figure 7).

In this area, the “savings” can be construed in terms of gains in psychological and emotional well-being, not merely cost-offset dollars. Again, the benefits, though associated with chemical dependency treatment, cannot be said to be exclusively caused by it; however, the data reveal that the benefits can not be caused by *psychiatric* treatment - in fact, the improvement in psychological symptoms occurred despite a *reduction* in psychiatric service utilization after chemical dependency treatment, not an increase.

Among adolescent outpatients, the reduction in psychiatric problems was not as pronounced, in part because outpatients had lower levels of psychiatric problems than inpatients to begin with. They had lower pre-treatment levels of major depressive syndrome (16% vs. 43%), intentional self-injury twice or more (20% vs. 32%), and suicide attempt (7% outpatients vs. 21%, inpatients). Outpatients did show declines in the prevalence of these problems, but they were not as dramatic as those found for inpatients. For example, in the year before the 18-month follow-up, the extent of major depressive syndrome dropped from 16% pre-treatment, to 11%. Similarly, rates of intentional self-injury decreased from 20% to 3%, in the same period, and suicide attempts decreased from 7% to 3%. As with inpatients, these reductions in psychiatric problems were not due to an increase in psychiatric service utilization, but a *decrease*.

Client Self-Perception of Functioning: The Washington adolescent treatment sample was queried for self-ratings of physical health, recent mood, and personal life satisfaction. Data revealed a trend for increasing self-perceived improvements in all three areas, from the time of treatment intake, through the 6-month, 12-month, and 18-month follow-up contact points. The greatest increase in self-ratings occurred between intake and initial six-month follow-up contact, and were maintained or extended at the two subsequent (12- and 18-month) follow-up contact points. These increases in self-perceived physical and emotional health correspond nicely with the decreases in medical and psychiatric utilization following chemical dependency treatment. Inpatients and outpatients showed similar patterns of increasing self-ratings over time (see Figure 8 and Tables 9A and 9B).

Figure 8. Inpatients' Positive Self-Ratings Over Time



School Functioning: Adolescents with substance involvement are disproportionately involved in school behavior and discipline problems when they are still attending classes. A subset of the Washington adolescent follow-up sample was analyzed in terms of its school functioning, consisting of clients who had not dropped out of school or graduated, in both the year before treatment and sometime (either at 12 or 18 month contact points) in the year before 18-month follow-up (see tables 10A and 10B).

As Table 10A shows, school discipline actions were highly prevalent among inpatients before treatment; for example, over four-fifths (82%) had been sent to the principal, and two-thirds (67%) had been suspended the year before treatment. In contrast, the rates were appreciably lower for clients in the year after inpatient treatment prior to the 18-month follow-up. For example, the percentage of adolescents sent to the principal dropped by over two-thirds, from 82% to 26%, and the rate of school suspensions decreased, by nearly the same extent (from 67% to 26%, a 61% reduction) in association with chemical dependency treatment (see figure 9). The extent of family conferences or expulsions also showed similar declines.

Figure 9. Rates of School Disciplinary Actions Before vs. After Inpatient Treatment

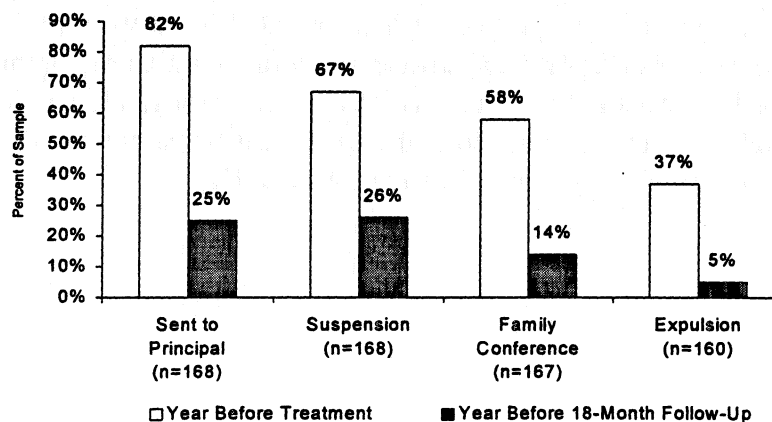
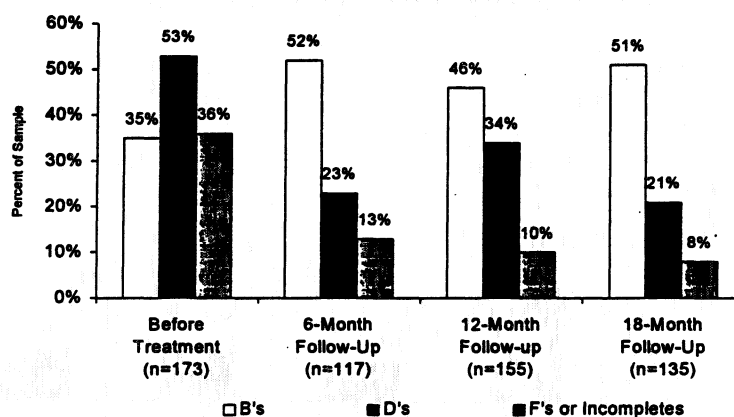


Table 10B shows that outpatients achieved success comparable to that of inpatients in reducing school problems after treatment, compared to the same length of time before. For example, the percentage of outpatients having any school discipline problems plunged dramatically from 81%, in the year before outpatient treatment to only 38%, in the year just prior to 18-month follow-up contact. Rates of suspensions, expulsions, family conferences, and occasions of being sent to the principal all showed substantial declines.

Not only did school problems decrease after inpatient treatment, but, as Figure 10 and Table 11A suggest, academic achievement improved. Clients were asked to indicate the two most common grades they received at that point in time. Before treatment, over half (53%) of adolescent inpatients said they received Ds, and over one-third, Fs or incompletes (36%), as typical grades. Trend analysis shows that at six-month follow-up, the proportion of students earning mostly Fs dropped by two-thirds (from 36%, before, to 13%, after treatment), and mostly Ds, by over half (53% vs. 23%). The percentages at the subsequent 12- and 18-month follow-up points remained correspondingly low. Conversely, the percentage earning As and Bs rose after treatment at six-month follow-up, and the academic gains were essentially maintained through the 12- and 18-month follow-ups.

Figure 10. Typical School Grades Before and After Inpatient Treatment *



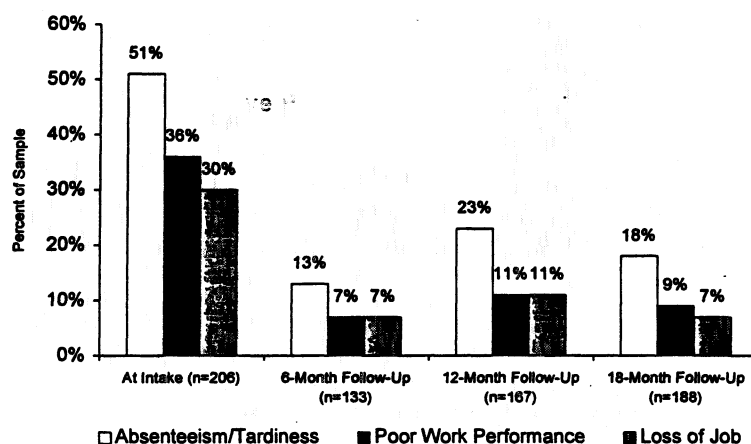
*Clients could indicate 2 grades most often received

Table 11B shows the changes in school grades over time for the adolescent outpatients. The percentage of outpatients earning Ds and Fs or Incompletes dropped sharply, by at least half or more, from before treatment to six months after treatment, then remained low up through 18 months after treatment. The proportion of outpatients earning As and Bs improved following treatment, but at a more gradual rate (see Table 11B).

Improvements in school functioning do not lend themselves to direct computation of immediate cost-offset figures as easily as reductions in medical utilization. It can be seen, however, that school discipline problems require the use (and often, diversion) of school resources which could more profitably be focused on the promotion of learning. Improvements in academic functioning have potential long-term "payoffs" in increasing educational attainment, and thereby improving client work opportunities and standard of living which, in turn, provide societal benefits.

Vocational Functioning: Untreated chemical dependency often leads to deterioration in workplace productivity, whereas successful treatment can be associated with improvements in job functioning. A sizable proportion of adolescents in the Washington treatment sample had some type of employment before and after treatment. A trend analysis of their vocational functioning at four points in time (intake, 6-, 12-, and 18-month follow-up contact points) indicates that certain job problems were much less common following treatment (see Figure 11 and Table 12A). Rates of poor job performance, absenteeism or tardiness, and job loss dropped dramatically by the time of the first post-treatment contact point (6-month follow-up), rose slightly at the 12- and 18-month follow-up points, then stabilized by the 18-month contact, to levels at 65% lower than pretreatment percentages.

Figure 11. Work Problems Related to Chemical Use Before and After Inpatient Treatment

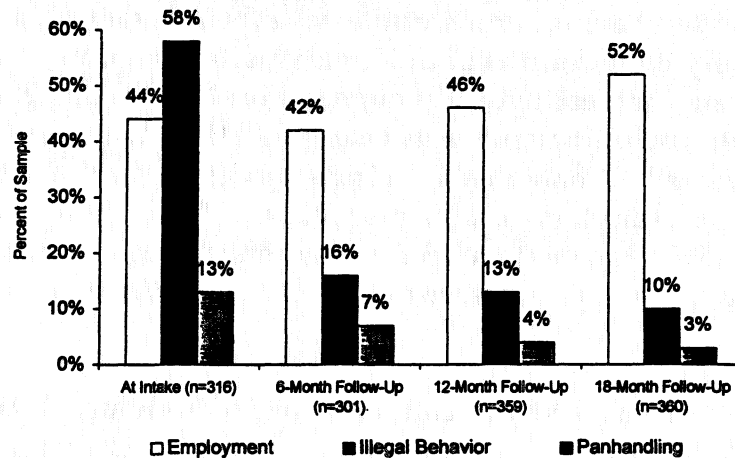


Among adolescent outpatients, the drops in work problems were less pronounced than among the inpatients (Table 12B). This is related to their much lower incidence of pre-treatment job problems in the first place. For example, only 13% of outpatients reported pre-treatment problems with poor job performance, compared to 36% of inpatients. Rates of pre-treatment job absenteeism/tardiness, warnings from boss and job loss were all lower among outpatients than inpatients.

Nonetheless, outpatients reported decreases in all the above work problems except for warnings from employers.

For adolescent inpatients, rates of employment (full- or part-time) as an income source increased very modestly after treatment, from 44% at intake to 52% at the 18-month follow-up. Interestingly, however, the prevalence of other sources of income changed more dramatically (see Figure 12 and Table 13A): the percentage of adolescents who cited welfare or public assistance as an income source doubled (10% pretreatment, to 21% at 18-month follow-up). In contrast, the proportion of inpatients obtaining income from illegal behavior (e.g., drug selling, prostitution, theft, etc.) plunged by over 80%, from 58% before treatment, to 16% at 6-month follow-up, 13% at 12-month follow-up, and 10% at 18-month follow-up. The percentage of adolescents relying on “panhandling” also declined after treatment.

Figure 12. Selected Sources of Income Before vs. After Inpatient Treatment



Similar to the inpatients, adolescent outpatients also reported reductions in illegal behavior and panhandling, as well as increases in employment and welfare as income sources after treatment. In fact, the gain in outpatients reporting employment as an income source (from 29%, pre-treatment to 54% by 18-month follow-up) was proportionately greater than that for inpatients (44% pretreatment to 52% at 18-month contact). See Table 13B.

The decreases in reported illegal behavior as a source of income could reflect actual declines in behavior plus reporting/response style biases; however, they do correspond with reports of posttreatment reductions in legal involvement, which are presented below. The increase in public assistance/welfare utilization may reflect greater engagement with county social service and economic assistance agencies; public assistance as an income source is much preferred over illegal behavior or

panhandling and, for many adolescents, may be a currently more viable alternative (given age restrictions and school requirements) than employment.

Legal Involvement: Adolescents who are entangled in the juvenile justice system tend to be disproportionately chemically involved (and vice-versa), for both chemically and non-chemically related offenses. Among these chemically abusive and dependent youth, any decreases in involvement with the juvenile justice system yield societal benefits, in an easing of demand on already overburdened legal and insurance systems. Legal fees, court costs, and auto insurance premiums can legitimately be factored into the “cost” of legal problems and should be factored into the calculation of the “benefits” of lowering legal involvement, in association with chemical dependency treatment.

In the present study, close to three-fourths of the inpatient adolescents (73%) and two-thirds of outpatients (68%) in the follow-up sample were court-referred, but an even larger percentage have had some type of prior contact with the legal system. As Tables 14A and 14B show, 85% of the adolescent inpatients and 86% of outpatients admitted having some trouble with the law sometime in their lifetime, and approximately three-fourths of inpatients and outpatients acknowledged having ever been arrested. Interestingly, although the proportion of legal involvement among inpatients and outpatients was nearly identical, the *severity* of legal involvement differed. Inpatients had a higher average number of times in trouble with the law per person than outpatients (10.0 vs. 5.2), a higher average number of arrests, lifetime (5.5, inpatients, vs. 3.8, outpatients), and a higher average number of arrests per person, in the year before treatment (3.4 per inpatient vs. 2.0 per outpatient).

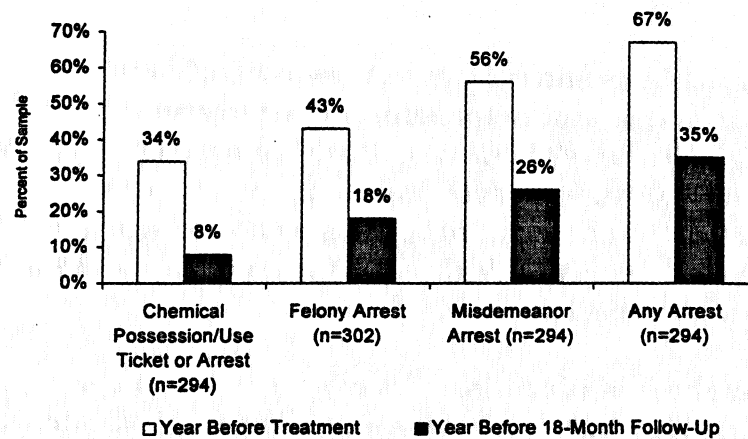
As Tables 15A and 15B indicate, over half of both inpatients (58%) and outpatients (60%) have spent a night in juvenile detention or jail, and nearly half (46% of inpatients, 48% of outpatients) have received an out-of-home placement to a juvenile correctional facility sometime before entering treatment. Not surprisingly, close to half of the inpatients (48%) as well as outpatients (46%) were under the supervision of a probation/parole officer at the time of treatment intake.

Being court-referred in and of itself was not a predictor of abstinence: 25% of court-referred adolescents (inpatients and outpatients combined) reported one-year full abstinence (the year prior to 18-month follow-up), compared with 26% of non-court-referred clients, a non-significant difference.

Figures 13 and 14 and Tables 16A and 17A compare inpatients’ legal involvement in the year prior to chemical dependency treatment to the year before the 18-month follow-up contact point. Both the proportions of youth with legal involvement as well as the average number of offenses per person declined appreciably following treatment. The percentage of adolescent inpatients arrested

for misdemeanors (56%) or felonies (43%) in the year before treatment dropped by at least half, compared to the year prior to 18-month contact (26% misdemeanors, 18% felonies). The proportion of substance-related infractions (possession/use) declined to a greater extent, from 34% pre-treatment to 8% post-treatment.

Figure 13. Incidences of Legal Involvement Before vs. After Inpatient Treatment



Among adolescent outpatients, the percentage with legal involvement similarly decreased after treatment. The drop was actually sharper for felony arrests (46% year before treatment vs. 9% year before 18-month follow-up) than misdemeanors (from 39% pre-treatment to 24% post-treatment). See Table 16B.

Figure 14 shows that not only was a lower proportion of adolescent inpatients arrested after treatment, but a lower average number of arrests per person was made after treatment. The total average number of misdemeanor arrests per inpatient declined from 2.4 in the year before treatment to .4 afterwards, a drop of five-sixths; the average number of felony arrests decreased by a similar proportion, from 1.2 to .3.

Figure 14. Average Number of Arrests Per Inpatient Before vs. After Treatment

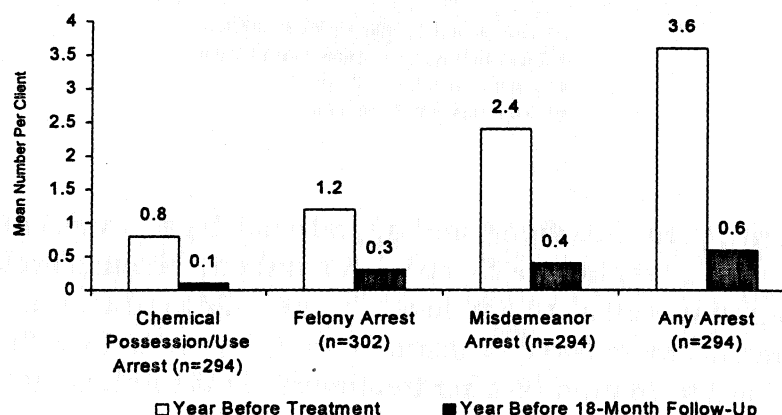
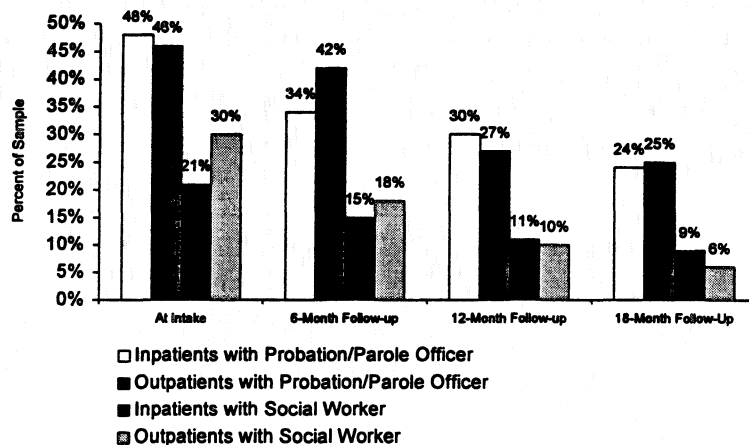


Table 17B shows that the mean number of arrests also significantly declined for outpatients even though their pre-treatment arrest levels were, on average, lower than that of their inpatient counterparts. For example, outpatients averaged 2.0 arrests per person in the year before treatment, while inpatients averaged 3.6. Regardless, the number of arrests among outpatients decreased 80%, from 2.0 pre-treatment to .4 in the year prior to 18-month follow-up contact. The average number of misdemeanor arrests (1.1 vs. .3) and felony arrests (.8 vs. .1) also dropped after treatment.

For both inpatients and outpatients, the rates of overnight jail or detention (58% of inpatients and 60% of outpatients, before treatment) and placement in a juvenile correction facility (46% inpatients, 48% outpatients) showed reductions associated with treatment. However, the pretreatment rate refers to percentage over a client's entire lifetime, and is thus not equivalent, in terms of length of time, to the posttreatment rate, which was calculated to reflect the entire 18-month posttreatment follow-up interval (Tables 15A and 15B).

A trend analysis of probation officer or social worker involvement at four points in time (intake, 6-, 12-, and 18-month follow-up) indicates that the decline in legal involvement after treatment was accompanied by a reduction in the incidence of adolescents needing the supervision of a probation/parole officer or social worker. See Figure 15 and Tables 18A and 18B.

Figure 15. Legal Supervision Before and After Treatment



In summary, for inpatients and outpatients, legal involvement significantly decreased after treatment for both chemical and non-chemical related offenses, and for misdemeanor as well as felony level charges. The reductions were similar to those presented in the one-year outcome report, but extend the "window of applicability" out to 18 months after treatment. This implies that the posttreatment

declines are relatively persistent, robust and stable findings, and not merely transitory phenomena or statistical artifacts such as regression to the mean.

PREDICTORS OF ABSTINENCE: PROGRAM FACTORS

The current follow-up sample of adolescents is not homogeneous, but comprises different program types, service levels, and specialty categories of placement. These can be examined for differential association with outcome. As mentioned above, 18-month contiguous abstinence arguably misrepresents recovery status for many patients as it underestimates the percentage of adolescents in positive recovery pathways. Therefore, for these analyses, two less restrictive criteria were adopted: 1) for overall status over the entire posttreatment period, "recovering" clients were defined as those with at least 15 months of abstinence out of the 18 months post-treatment (zero to three months with chemical use out of 18 possible). This is referred to as the "Extended Recovery Rate." The second criterion was the full abstinence rate for the most recent six-month period prior to the 18-month follow-up contact. This is a measure of the client's most current recovery status or "recent abstinence" at the end of 18 months post-treatment. For all analyses in this section, the "recovering" clients are contrasted to the remainder of the sample, which could be considered "non-recovering" or whose recovery was "uncertain." One must be careful not to overinterpret apparent disparities in outcome between program types, as other factors, such as differential patient clinical and demographic features may account for much of the discrepancy. As with previous analyses, findings are presented for inpatients and outpatients separately.

Mixed vs. Adolescent Only Facilities: A portion of the adolescents in the present outcome study attended chemical dependency treatment in facilities that house both adolescent and adult clients under one roof. Their outcomes can be compared to those of clients from all-adolescent programs (the mixed vs. adolescent only distinction does not apply to outpatients, who were all treated in all-adolescent programs - see Tables 19A and 19B). The "extended recovery rate" (i.e., the percentage of inpatients abstinent for at least 15 of 18 months after treatment) for adolescents in mixed facilities (42%) was actually higher than that for those in adolescent-only programs (36%). The finding is hard to interpret unambiguously, due to the relatively small number of adolescents in mixed programs (n=53, vs. n=232 for all-adolescent). In addition, the "recent abstinence rate" does not follow the same pattern - the mixed facility abstinence rate of 42% is the same as the adolescent-only rate. A tentative conclusion from these figures would be that the adolescents who were placed in mixed inpatient facilities did not face any consistently greater risk for relapse than the clients treated in the traditional manner, i.e, in adolescent-only programs. Whether this trend would hold in general cannot be extrapolated from the current data.

Coed vs. Gender-segregated: Programs can be categorized by whether their clients were coed or of one gender only. As above, the distinction applies to inpatient settings only. In the follow-up sample, the majority of the adolescents were treated in coeducational programs, the remainder in gender-segregated facilities. Both "extended" and recent abstinence rates favored those in the gender-segregated facilities compared to those in coed programs (e.g., 44%, gender-segregated, vs. 30%, co-ed, extended recovery rates, respectively - see Table 19A).

The difference in recovery rates does not automatically mean that gender-segregated programs are more effective than coed ones. Further data analysis reveals that the type of program interacted strongly with client gender in the prediction of outcome. When the coed and gender-segregated program outcomes are broken down separately by gender, the results indicate that while gender-segregated programs show roughly comparable outcomes for females and males (e.g., 42% vs. 47%, respectively, for recent abstinence rates), coed programs show a marked disadvantage for males (29% recent abstinence rate) compared to females (50% abstinent). In other words, the worst prognosis clients, both in terms of overall recovery and recent abstinence, were *males* treated in coeducational programs (see Figures 16 & 17), while females in coed programs, males in gender-segregated programs, and females in gender-segregated programs had broadly similar outcomes. It is not clear what specific factors in this high-risk group are responsible for the poor outcomes (e.g., are males in coed programs more "distracted" from recovery efforts by the presence of females than vice-versa?), but the findings do argue for the importance of closely evaluating the merits of coed vs. gender-segregated programs in placement decisions, especially for adolescent males.

Figure 16. Males in Coed Facilities Have Poorest Extended Recovery Rates

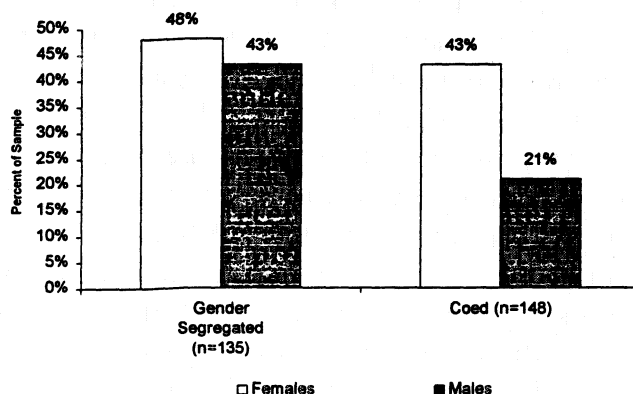
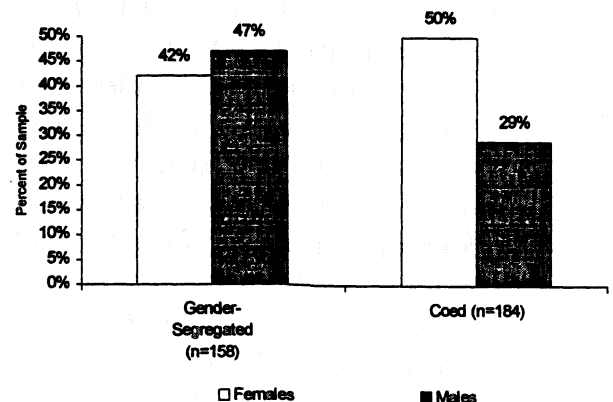


Figure 17. Males in Coed Facilities Have Poorest Recent Abstinence Rates



Length of Stay: In adolescent residential(inpatient) chemical dependency treatment, the length of stay can be evaluated for its relationship to treatment outcome. One literature review of research on adolescent treatment outcomes (Catalano, et.al., 1990-1991) concluded that length of time in treatment was linked to outcome, but weakly

and not always in the expected direction; evidence for outpatient programs was more mixed than for inpatients. The ambiguous results are not surprising when one considers that length of stay can be confounded with factors such as patient severity of chemical use, co-occurring problems, and discharge status.

For the Washington state adolescent treatment sample, findings are mixed. Table 19A shows that extended recovery rate was highest for the longest stay category: 43% for clients in treatment over five weeks, vs. 35% for adolescents in treatment four to five weeks, 32% of those in treatment two to four weeks, and 33% of clients in treatment zero to two weeks. This finding would suggest a type of "dose-response" relationship between length-of-stay and outcome. However, the results based on recent abstinence rate (the six months just prior to 18-month contact) were reversed: the highest recent abstinence rate (54%) was obtained by clients who were in treatment for the *briefest* period - zero to two weeks. These paradoxical outcomes are hard to interpret decisively. One speculative hypothesis is that the clients with only zero to two weeks of treatment may have had problems with relapse in the first six months to one year after treatment, but may then have re-attempted chemical dependency treatment (i.e., been "re-treated") and subsequently been able to maintain six months of abstinence prior to the 18-month follow-up contact point.

For the adolescents in the follow-up sample who received outpatient treatment, the findings are tenuous, due to a much smaller sample size (n=53 and n=81 for extended and recent recovery samples, respectively). Clients who had up to 30 days of outpatient treatment had an extended recovery rate (47%) higher than the percentage for clients with 31 to 60 treatment days (38%), or with over 60 days of outpatient care (33%). Recent abstinence rates were comparable for adolescents receiving up to 30 days of treatment (57% abstinent) and between 30 and 60 outpatient days (56%); these percentages, in turn, exceeded that for the clients with greater than 60 outpatient treatment days (37% abstinent). Due to the small subsample sizes, one cannot distinguish whether the findings reflect statistical "margin of error," confounding influences of patient factors such as severity and prognosis or re-treatment, or an actual negative impact of extended (over 60 days) outpatient care. See Table 19B.

Discharge Status: Successful initial treatment completion is generally an important initial milestone on the path of recovery. As Table 19A indicates, adolescent inpatients who successfully completed treatment had a significantly higher extended recovery rate (40% with "extended recovery, or 15 or 18 months abstinent, post-treatment) than clients who withdrew or were discharged against medical advice (AMA - 26% recovery rate), or who left treatment because of rule violations (29% in extended recovery). However, similar to length-of-stay results, "recent abstinence rate" findings were paradoxical: the abstinence rate for treatment completers (42%) was fairly similar to that for AMA clients (40%) and those discharged for rule violations (38%). Again, one possibility is that intervening chemical dependency re-

treatment for initial treatment noncompleters may be confounding the results by improving their outcomes.

Outpatient findings are again more equivocal, due to the small subsample sizes. Program completers did have higher extended recovery rates (54%) than those discharged AMA (31%) or for rule violations (35%), but they had a lower recent abstinent rate (60%) than outpatients who had left treatment because of rule violations (67% recently abstinent).

Parental Involvement in Treatment: Logically, one indicator of adolescent engagement in the treatment process is parental involvement during treatment, especially if clients return to the parental home after treatment. The extent to which parental involvement in treatment is associated, directly and indirectly, with adolescent abstinence can be also examined empirically. The results in Table 20A suggest that parental involvement in inpatient treatment is, at best, a mild predictor of adolescent outcomes. In terms of extended recovery rates, the participation by clients' mothers and fathers was weakly associated with higher recovery rates compared to partial or non-involvement. However, inpatients whose fathers' treatment involvement was coded as "Not Applicable," (due, presumably, to the father's non-presence in the family) had the worst outcomes (27% extended recovery rate).

Parental participation during inpatient treatment was a predictor of successful adolescent treatment completion, which, as shown earlier, is itself associated with abstinence. This finding holds for both mothers and fathers of the adolescents in treatment. For example, nearly three-fourths of the adolescents whose mothers participated fully in treatment (73%) successfully completed the program, compared to less than two-thirds of the inpatients with only partial (59% treatment completion) or non-involvement (60%) by their mothers. Similarly, over three-fourths (79%) of the adolescents with full paternal involvement completed treatment, compared to 73% of clients with partial involvement and half (66%) of those with no participation by their fathers. Inpatients whose fathers' involvement was "Not Applicable" had the worst rate of treatment completion - 56%.

A similar analysis of outpatient outcomes by parental involvement in treatment is handicapped by small subsample sizes (e.g., from a high of 40 to a low of 2), and their correspondingly large "margins of error." (see Table 20B).

Client Satisfaction: In the present study, adolescents who underwent chemical dependency treatment were asked to provide client satisfaction ratings on various aspects of the treatment program. These data were collected at the three-month follow-up contact point, in part to avoid a "halo effect," or overly favorable ratings when clients are queried at the immediate completion of treatment. Results (these were presented in the one-year outcome report) indicated that four of five (81%)

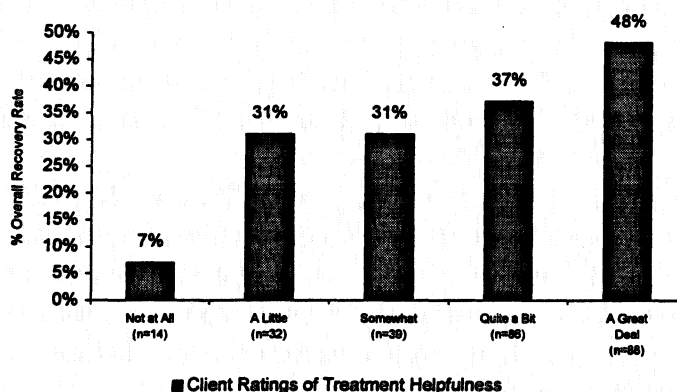
adolescents were satisfied with their treatment, overall. An even higher proportion (86%) of clients were satisfied with the opportunity to talk with other patients. About three fourths were satisfied with the effectiveness of counseling in resolving their problems (74%), with individual counseling (76%), and with group counseling (74%). The lowest satisfaction ratings, which still can be considered high, were for school or tutoring services (68% satisfied), and for family counseling (68%).

Client satisfaction was only weakly correlated with abstinence. With respect to the inpatient sample, adolescents who were satisfied generally had only slightly higher abstinence rates than clients who were dissatisfied. In terms of "extended recovery" rates (defined as abstinence in at least 15 of 18 months after treatment), the only statistically significant differences were for overall satisfaction (41% extended recovery rate for satisfied inpatients vs. 16% for those not satisfied), and satisfaction with individual counseling (41% extended recovery rate for satisfied patients vs. 27% for inpatients not satisfied with individual counseling). Interestingly, the most favorably rated treatment component, the opportunity for peer discussion (90% satisfaction level), was slightly *negatively* related to outcome, in terms of extended recovery rates: 37% of satisfied vs. 42% of dissatisfied adolescents. For *recent* abstinence rates (defined as no chemical use in the six months just prior to 18-month follow-up contact), *none* of the dimensions of patient satisfaction significantly correlated with that outcome (see Table 21A).

For the adolescent outpatient sample, none of the dimensions of client satisfaction was statistically significantly associated with either extended recovery rate or recent abstinence. Again, the small subsample sizes associated with the outpatient sample mitigated against statistical significance, even for apparently large differences in outcome for satisfied vs. non-satisfied patients. See Table 21B.

Other client ratings did correlate with outcome, where extended recovery rate was concerned: for inpatients, their ratings of how much treatment helped were directly associated with outcome. Clients who stated that they were helped by treatment "a great deal" were more likely to have extended recovery (48%) than those who said they were helped "quite a bit" (37%), "somewhat" or "a little" (31% for both), or inpatients who were helped by treatment "not at all" (only 7% with extended recovery - see Table 22A and Figure 18). In addition, the extended recovery rate among inpatients who believed their length of treatment was "About right" (44%) was higher than that for adolescents who thought treatment was either a little too short (38% abstinent) or a little too long (22%).

Figure 18. Extended Recovery* Rates According to Client Ratings of Inpatient Treatment Helpfulness



*Extended recovery defined as abstinence in at least 15 of 18 months after treatment

On the other hand, the ratings of inpatient treatment helpfulness and adequacy of length of stay had no consistent relationship to recent abstinence rate (six months before 18-month follow-up contact without relapse - see Table 22A).

For adolescent outpatients, the associations between outcome and client treatment ratings were equivocal at best, again in large part due to small subsample sizes and consequent statistical instability (see Table 22B). Similar to inpatient findings, ratings of treatment helpfulness were associated with extended recovery rates. However, ratings of the adequacy of treatment length showed no simple relationship to extended recovery. Neither type of client treatment rating was directly correlated with recent abstinence (no use in most recent six months prior to 18-month follow-up contact).

OTHER PREDICTORS OF OUTCOME

Post-treatment Continuum of Care: As mentioned above, CATOR analyses have shown peer support group involvement and continuing care after discharge strongly predict outcome. For adolescent inpatients, formal aftercare *completion* anytime within the first 18 months after treatment discharge was associated with an extended recovery rate (66%) over twice as high as the rate for aftercare noncompletion or ongoing involvement (30%). Even recent abstinence rates were significantly higher for aftercare completers (61%) compared to noncompleters or those still attending (37%). Unfortunately, only 18% of the follow-up sample completed program aftercare within 18 months after inpatient treatment. In comparison, completion of individual counseling and family counseling were not statistically correlated with more favorable outcomes (see Table 23A).

For the outpatient sample, program aftercare completers did report higher abstinence rates (both extended and recent) compared to those still attending or not completing (54% extended recovery for completers vs. 38%) but, due to the small subsample sizes, the disparity did not achieve statistical significance. See Table 23B.

Table 24A presents the correlations between continuum-of-care involvement (AA, program aftercare, and individual counseling) and abstinence at three different points in time - 6, 12, and 18 months after inpatient treatment. The pattern of correlations, though not perfect, indicates that AA attendance had the strongest association with outcome, followed by program aftercare, while individual counseling involvement was most weakly predictive of outcome. A general trend in Table 24A was that continuum-of-care involvement at a specific follow-up contact point (e.g., at 12-month follow-up) is most strongly related to abstinence at the *same* point, not to abstinence rates at earlier (i.e., at 6-month follow-up) or later (18-month follow-up) times. This suggests that current AA involvement is most predictive of current abstinence, as opposed to past or future probability of relapse.

For adolescent outpatients, the association between continuum-of-care participation and abstinence was weaker. Again, the results do not lead to any definitive conclusions; a much larger outpatient sample would be needed to yield statistically reliable findings. See Table 24B.

PreTreatment Chemical Use: Chemical use severity, as embodied in the number of substances an adolescent is dependent upon, was correlated with outcome. Adolescent inpatients who were involved (dependence or abuse) with only one substance had a significantly higher extended recovery rate (48%) than clients involved with 2 (40%), 3 (29% recovery rate) or more (33%) chemicals, prior to treatment. The pattern of results for recent abstinence rates was similar (see Table 5A).

Differences in outcome according to type of substance used were less pronounced. The extended recovery rates for inpatients dependent on marijuana (32%), alcohol (36%), hallucinogens (33%) or cocaine (31%) were comparable. One difficulty in interpreting these results is that clients can be dependent on more than one substance, so that the same individuals can be represented in more than one substance dependence category.

In the adolescent outpatient sample, the relationship between number of substances used before treatment and recovery status was ambiguous, as small subsample sizes (ranging from 34 to only 3) obscured the emergence of any strong trends (Table 25B). For the same reason, no firm conclusions can be drawn on the association between pre-treatment type of substance used and recovery status.

Demographics: Tables 26A and 26B present the relationships between demographic variables such as gender, age, ethnicity, income, and abstinence, both extended (defined as no chemical use in at least 15 or more of the 18 months posttreatment) and recent (defined as abstinence the six months just prior to 18-month contact). Again, small subsample sizes render outpatient findings rather tentative but, in general, demographic variables were not consistent or powerful predictors of abstinence among either inpatients or outpatients. For example, inpatient females had higher extended recovery rates (46%) than inpatient males (31%), but outpatient females had lower rates (31%) than outpatient males (47%); only the first result was statistically significant. The lack of strong association between demographic variables and outcome is consistent with past CATOR analyses of adult and adolescent aggregate registries which indicate that post-treatment factors, such as continuum-of-care involvement, are more powerful predictors of recovery status than pre-treatment variables.

FINAL COMMENTS

Although an outcome evaluation over an 18-month posttreatment interval cannot conclusively provide definitive long-term outcome results, such an analysis can be helpful in 1) extending the range of applicability of one-year posttreatment outcome findings, and 2) representing powerful prognostic information for long-term outcome (in the best sense that 'the best predictor of future behavior is past behavior'). Thus, it is important that the one-year findings of significant reductions in medical utilization, school discipline problems, and legal involvement, were maintained and extend out further in time, through 18 months after treatment. There was little evidence of any "slippage" towards pretreatment levels. The principal *caveat* to the current follow-up outcome study is that the extent to which it applies (or generalizes) to the *entire* population of adolescents entering chemical dependency is constrained in part by the extent to which the adolescents contacted for follow-up resemble or differ from the clients unable to be contacted. Regardless of this caveat, it is reasonable to conclude that the adolescents in the State of Washington inpatient as well as outpatient chemical dependency treatment follow-up samples did obtain measurable benefits associated with treatment, both direct, as in reduction or cessation of chemical use, and indirect, as in improvements in physical and emotional health, school and workplace adjustment, and increases in freedom from court entanglements.

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Appendix: Tables

Table 1.
Abstinence Measures

	Inpatients		Outpatients	
	n	%	n	%
Recent (6 Month) Abstinence at 6-Month Follow-Up	561	36%	220	44%
Recent (6 Month) Abstinence at 12-Month Follow-Up	519	38%	183	42%
Recent (6 Month) Abstinence at 18-Month Follow-Up	451	41%	127	51%
One-Year Abstinence at 18-Month Follow-Up	366	24%	105	30%
One-Year Abstinence at 12-Month Follow-Up	422	22%	155	29%
Contiguous (Full 18-Month) Abstinence	301	14%	91	23%

Table 2.
Selected Pretreatment Differences: Inpatients vs. Outpatients

	Inpatients (n=366)		Outpatients (n=105)	
Gender	n	%	n	%
Male	221	60%	63	60%
Female	145	40%	42	40%
Ethnicity				
Caucasian	261	75%	63	61%
African-American	10	3%	20	19%
Hispanic/ Latino	25	7%	11	11%
Native American	34	10%	2	2%
Asian/ Pacific Islander/ Other	16	5%	8	7%
Age				
<15	91	25%	21	20%
15	87	24%	21	20%
16	80	22%	29	28%
17 and Older	108	29%	34	32%
Family Income				
<\$10,000	108	30%	20	19%
\$10,001-\$20,000	94	26%	16	15%
\$20,001-\$50,000	81	22%	34	32%
>\$50,000	83	22%	35	33%
Number of CD Diagnoses at Discharge (Abuse or Dependence)				
0 or 1	31	9%	5	7%
2 or 3	201	58%	50	74%
4 or More	112	33%	13	19%
Alcohol Use=Daily, Before Treatment	82	23%	11	11%
Marijuana Use=Daily, Before Treatment	168	48%	34	33%
Crack Cocaine=Any Use Before Treatment	72	20%	9	9%
History of Family Alcohol Problems	211	60%	44	43%
History of Family Drug Problems	171	49%	35	34%
History of Physical Abuse	138	39%	32	31%
History of Sexual Abuse	107	30%	25	25%
Peer Chemical Use=Over Half, Most or All	235	67%	52	50%
Major Depressive Syndrome	152	43%	16	16%
Self-Mutilation: 2 or More Times	112	32%	20	20%
Suicide Attempt, Past Year	74	21%	7	7%

Table 3A.
Abstinence/ Relapse Pattern: Inpatients (n=301)

n	%	Months 0-6	Months 7-12	Months 13-18
41	14%	Abstained	Abstained	Abstained
34	11%	Relapsed	Abstained	Abstained
14	5%	Abstained	Relapsed	Abstained
32	11%	Relapsed	Relapsed	Abstained
19	6%	Abstained	Abstained	Relapsed
21	7%	Relapsed	Abstained	Relapsed
25	8%	Abstained	Relapsed	Relapsed
115	38%	Relapsed	Relapsed	Relapsed

Table 3B.
Abstinence/ Relapse Pattern: Outpatients (n=91)

n	%	Months 0-6	Months 7-12	Months 13-18
21	23%	Abstained	Abstained	Abstained
7	8%	Relapsed	Abstained	Abstained
6	7%	Abstained	Relapsed	Abstained
16	18%	Relapsed	Relapsed	Abstained
3	3%	Abstained	Abstained	Relapsed
5	5%	Relapsed	Abstained	Relapsed
5	5%	Abstained	Relapsed	Relapsed
28	31%	Relapsed	Relapsed	Relapsed

Table 4A.
Number of Months of Chemical Use 18 Months After Treatment: Inpatients (n=301)

		n	%
Zero		41	14%
1 to 3	Favorable	69	23%
4 to 7		64	21%
8 to 11	Uncertain/ Mixed	48	16%
12 to 15		49	16%
16 to 18	Unfavorable	30	10%
[Average = 7.1]			

Table 4B. Number of Months of Chemical Use 18 Months After Treatment: Outpatients (n=91)			
		n	%
Zero		21	23%
1 to 3	Favorable	16	18%
4 to 7		20	22%
8 to 11	Uncertain/ Mixed	18	20%
12 to 15		9	10%
16 to 18	Unfavorable	7	8%
[Average = 5.9]			

Table 5A.
Number of Substances Used Before vs. After Treatment: Inpatients (n=301)

	Year Before Treatment		Year Before 18-Month Follow-Up	
Number	n	%	n	%
Zero	3	<1%	88	25%
1 to 2	58	16%	139	39%
3 to 5	168	48%	93	26%
6 or More	124	35%	33	9%
	Avg = 5.0		Avg = 2.4	

Table 5B.
Number of Substances Used Before vs. After Treatment: Outpatients (n=102)

Number	Year Before Treatment		Year Before 18-Month Follow-Up	
	n	%	n	%
Zero	2	2%	30	29%
1 to 2	42	41%	49	48%
3 to 5	32	31%	22	22%
6 or More	26	26%	1	1%
	Avg = 2.9		Avg = 1.6	

Table 6.
Tobacco Use Before vs. After Treatment

	Inpatient		Outpatient	
	n	%	n	%
Any Use Before Treatment	805	86%	327	79%
Any Use at 3-Month Follow-Up	642	82%	259	72%
Any Use at 6-Month Follow-Up	564	82%	223	75%
Any Use at 12-Month Follow-Up	539	80%	193	68%
Any Use at 18-Month Follow-Up	470	75%	133	67%

Table 7A.
Incidence of Medical Utilization: Inpatients

	n	Year Before Treatment	Year Before 18-Month Follow-Up
Hospital Care			
Medical Hospitalization	321	15%	16%
Psychiatric Hospitalization	319	10%	1%
Detox Admission	317	9%	2%
Emergency Room Visits	317	41%	32%
Outpatient Care			
For Illness	343	56%	49%
For Injury	339	42%	31%
Psychiatric	317	12%	3%
Psychiatric Problems			
Major Depressive Syndrome	352	43%	26%
Suicide Attempt	351	21%	7%
Intentional Self-Injury (2 or More Times)	352	32%	6%

Table 7B.
Incidence of Medical Utilization: Outpatients

	n	Year Before Treatment	Year Before 18-Month Follow-Up
Hospital Care			
Medical Hospitalization	77	14%	10%
Psychiatric Hospitalization	76	5%	1%
Detox Admission	76	1%	3%
Emergency Room Visits	76	32%	26%
Outpatient Care			
For Illness	99	48%	46%
For Injury	99	39%	31%
Psychiatric	77	5%	3%
Psychiatric Problems			
Major Depressive Syndrome	101	16%	11%
Suicide Attempt	102	7%	3%
Intentional Self-Injury (2 or More Times)	101	20%	3%

Table 8A.
Average Amount of Medical Utilization per Inpatient Client

	n	Year Before Treatment	Year Before 18-Month Follow-Up
Hospital Care		Average #	Average #
Medical Hospitalization	321	.29	.21
Psychiatric Hospitalization*	319	.11	.02
Detox Admission	317	.10	.06
Emergency Room Visit*	317	1.08	.58
Outpatient Care			
For Illness	343	2.52	2.03
For Injury*	339	1.82	.89
Psychiatric*	317	.93	.14

* All asterisked pre-post comparisons are statistically significant at $p < .01$, using paired sample t-tests.

Table 8B.
Average Amount of Medical Utilization per Outpatient Client

	n	Year Before Treatment	Year Before 18-Month Follow-Up
Hospital Care		Average #	Average #
Medical Hospitalization	77	.18	.14
Psychiatric Hospitalization	76	.05	.01
Detox Admission	76	.01	.03
Emergency Room Visit	76	.66	.42
Outpatient Care			
For Illness*	99	1.88	.93
For Injury	99	.93	.96
Psychiatric	77	.06	.34

* All asterisked pre-post comparisons are statistically significant at $p < .01$, using paired sample t-tests.

**Table 9A.
Inpatient Clients Self-Ratings Over Time**

	At Treatment Intake		At 6-Month Follow-Up		At 12-Month Follow-Up		At 18-Month Follow-Up	
	n	%	n	%	n	%	n	%
Physical Health								
Excellent or Good	346	63%	303	71%	364	69%	361	73%
Fair or Poor	346	37%	303	29%	364	31%	361	27%
Mood in Past Month								
Excellent or Very Good	349	12%	302	39%	365	43%	365	45%
Up & Down, Bad or Very Bad	349	88%	302	61%	365	57%	365	55%
Personal Life Satisfaction								
Extremely or Very Satisfied	350	15%	302	33%	364	33%	364	40%
Satisfied, Somewhat or Very Dissatisfied	350	85%	302	67%	364	67%	364	60%

Table 9B.
Outpatient Clients Self-Ratings Over Time

	At Treatment Intake		At 6-Month Follow-Up		At 12-Month Follow-Up		At 18-Month Follow-Up	
	n	%	n	%	n	%	n	%
Physical Health								
Excellent or Good	97	72%	90	79%	105	70%	103	76%
Fair or Poor	97	28%	90	21%	105	30%	103	24%
Mood in Past Month								
Excellent or Very Good	103	25%	91	50%	105	50%	104	51%
Up & Down, Bad or Very Bad	103	75%	91	50%	105	50%	104	51%
Personal Life Satisfaction								
Extremely or Very Satisfied	103	19%	91	40%	104	43%	102	38%
Satisfied, Somewhat or Very Dissatisfied	103	81%	91	60%	104	57%	102	62%

Table 10A.		
School Problems Before vs. After Treatment: Inpatients		
	Year Before Treatment	Year Before 18-Month Follow-Up
Sent to Principal (n=168)*	82%	25%
Family Conference (n=167)*	58%	14%
Suspension (n=168)*	67%	26%
Expulsion (n=160)*	37%	5%
School Probation (n=162)*	34%	9%
Other (n=135)*	23%	5%
Any School Discipline (n=179)*	88%	38%

* All asterisked pre-post comparisons are statistically significant at $p < .05$.

Table 10B.
School Problems Before vs. After Treatment: Outpatients

	Year Before Treatment	Year Before 18-Month Follow-Up
Sent to Principal (n=57)*	70%	30%
Family Conference (n=55)*	51%	24%
Suspension (n=56)*	68%	27%
Expulsion (n=55)*	36%	16%
School Probation (n=55)	31%	22%
Other (n=48)	15%	4%
Any School Discipline (n=58)*	81%	38%

* All asterisked pre-post comparisons are statistically significant at $p < .05$.

**Table 11A.
Most Common School Grades Before vs. After Treatment*: Inpatients**

	At Intake (n=173)	At 6-Month Follow-Up (n=117)	At 12-Month Follow-Up (n=155)	At 18-Month Follow-Up (n=135)
As	17%	26%	26%	23%
Bs	35%	52%	46%	51%
Cs	49%	42%	34%	38%
Ds	53%	23%	21%	21%
Fs/ Incompletes	36%	13%	10%	8%

* Adolescents could indicate 2 grades most often received.

**Table 11B.
Most Common School Grades Before vs. After Treatment*: Outpatients**

	At Intake (n=60)	At 6-Month Follow-Up (n=40)	At 12-Month Follow-Up (n=54)	At 18-Month Follow-Up (n=44)
As	13%	12%	13%	18%
Bs	43%	40%	52%	52%
Cs	65%	58%	52%	54%
Ds	50%	22%	17%	20%
Fs/ Incompletes	28%	10%	7%	0%

* Adolescents could indicate 2 grades most often received.

Table 12A.
Incidence of Work Problems Related to Chemical Dependency: Inpatients

	At Intake (n=206)	At 6-Month Follow-Up (n=133)	At 12-Month Follow-Up (n=167)	At 18-Month Follow-Up (n=188)
Poor Performance	36%	7%	11%	9%
Missed Work/ Late to Work	51%	13%	23%	18%
Warning From Employer	25%	6%	14%	12%
Loss of Job	30%	7%	11%	7%

Table 12B.
Incidence of Work Problems Related to Chemical Dependency: Outpatients

	At Intake (n=62)	At 6-Month Follow-Up (n=45)	At 12-Month Follow-Up (n=56)	At 18-Month Follow-Up (n=55)
Poor Performance	13%	5%	5%	4%
Missed Work/ Late to Work	23%	9%	14%	13%
Warning From Employer	7%	5%	11%	11%
Loss of Job	8%	11%	5%	4%

Table 13A.
Selected Sources of Income Before and After Treatment: Inpatients

	At Intake (n=316)	At 6-Month Follow-Up (n=301)	At 12-Month Follow-Up (n=359)	At 18-Month Follow-Up (n=360)
Employment	44%	42%	46%	52%
Allowance	56%	41%	34%	29%
Family Support	35%	71%	71%	61%
Significant Other	11%	26%	29%	26%
Welfare/ Public Assistance	10%	20%	23%	21%
Panhandling	13%	7%	4%	3%
Illegal Behavior	58%	16%	13%	10%

Table 13B.
Selected Sources of Income Before and After Treatment: Outpatients

	At Intake (n=94)	At 6-Month Follow-Up (n=90)	At 12-Month Follow-Up (n=104)	At 18-Month Follow-Up (n=101)
Employment	29%	49%	51%	54%
Allowance	49%	37%	32%	33%
Family Support	48%	74%	66%	62%
Significant Other	14%	31%	34%	18%
Welfare/ Public Assistance	8%	27%	17%	16%
Panhandling	5%	2%	3%	2%
Illegal Behavior	26%	3%	8%	4%

Table 14A.**Lifetime Legal Involvement Before Treatment: Inpatients**

	n	% of Clients	Average # per Client
Any Trouble With the Law, Ever	344	85%	10.0
Any Arrest, Ever	346	76%	5.5
Any Arrest, Year Before Treatment	342	66%	3.4

Table 14B.
Lifetime Legal Involvement Before Treatment: Outpatients

	n	% of Clients	Average # per Client
Any Trouble With the Law, Ever	103	86%	5.2
Any Arrest, Ever	101	75%	3.8
Any Arrest, Year Before Treatment	96	58%	2.0

Table 15A.
Detention and Correctional Placement Before and After Treatment: Inpatients

	Any Time Before Treatment	Within 18 Months After Treatment
Detention/ Jail Overnight (n=275)	58%	37%
Juvenile Correctional Facility Placement (n=276)	46%	28%

Table 15B.**Detention and Correctional Placement Before and After Treatment: Outpatients**

	Any Time Before Treatment	Within 18 Months After Treatment
Detention/ Jail Overnight (n=80)	60%	41%
Juvenile Correctional Facility Placement (n=80)	48%	29%

Table 16A.
Incidence of Legal Involvement Before vs. After Treatment: Inpatients

		Year Before Treatment	Year Before 18-Month Follow-Up
	n	% of Clients	% of Clients
Any Arrest	294	67%	35%
Misdemeanor Arrest	294	56%	26%
DUI/ DWI Arrest	306	6%	2%
Physical Control of Vehicle (APC) Arrest	297	7%	3%
Other Misdemeanor Arrest	301	53%	24%
Felony Arrest	302	43%	18%
Alcohol/ Drug Possession/ Use Ticket/Arrest	294	34%	8%

Table 16B.
Incidence of Legal Involvement Before vs. After Treatment: Outpatients

		Year Before Treatment	Year Before 18-Month Follow-Up
	n	% of Clients	% of Clients
Any Arrest	85	56%	29%
Misdemeanor Arrest	85	39%	24%
DUI/ DWI Arrest	87	3%	0%
Physical Control of Vehicle (APC) Arrest	87	1%	0%
Other Misdemeanor Arrest	87	38%	24%
Felony Arrest	88	46%	9%
Alcohol/ Drug Possession/ Use Ticket/Arrest	89	17%	4%

Table 17A.
Average Number of Arrests per Inpatient Client Before vs. After Treatment

		Year Before Treatment	Year Before 18-Month Follow-Up
	n	Average # per Client	Average # per Client
Any Arrest*	294	3.6	.6
Misdemeanor Arrest*	294	2.4	.4
DUI/DWI Arrest*	306	.08	.03
Physical Control of Vehicle (APC) Arrest*	297	2.0	.04
Other Misdemeanor Arrest*	301	2.1	.3
Felony Arrest*	302	1.2	.3
Alcohol/ Drug Possession/ Use*	294	.8	.1

* Difference is statistically significant at $p < .005$ using paired sample t-test.

Table 17B. Average Number of Arrests per Outpatient Client Before vs. After Treatment			
		Year Before Treatment	Year Before 18-Month Follow-Up
	n	Average # per Client	Average # per Client
Any Arrest*	85	2.0	.4
Misdemeanor Arrest*	85	1.1	.3
DUI/DWI Arrest*	87	.03	.00
Physical Control of Vehicle (APC) Arrest*	87	.01	.00
Other Misdemeanor Arrest*	87	1.1	.3
Felony Arrest*	88	.8	.1
Alcohol/ Drug Possession/ Use*	89	.2	.1

* Difference is statistically significant at $p < .005$ using paired sample t-test.

Table 18A.
Legal Supervision Over Time: Inpatients

	At Intake (n=339)	At 6-Month Follow-Up (n=301)	At 12-Month Follow-Up (n=357)	At 18-Month Follow-Up (n=337)
Under Current Supervision of a Probation/ Parole Officer	48%	34%	30%	24%
Under Current Supervision of a Social Worker	21%	15%	11%	9%
Current Legal Charge				
Pending:				
Misdemeanor	NA	13%	18%	13%
Felony	NA	8%	9%	7%

Table 18B.
Legal Supervision Over Time: Outpatients

	At Intake (n=339)	At 6-Month Follow-Up (n=301)	At 12-Month Follow-Up (n=357)	At 18-Month Follow-Up (n=337)
Under Current Supervision of a Probation/ Parole Officer	46%	42%	27%	25%
Under Current Supervision of a Social Worker	30%	18%	10%	6%
Current Legal Charge				
Pending:				
Misdemeanor	NA	12%	9%	6%
Felony	NA	9%	10%	4%

Table 19A.
Inpatient Program Factors and Prediction of Outcome

	n	Extended Recovery Rate*	n	Recent Abstinence Rate*
Program Factor				
Adolescent Only	232	36%	279	42%
Mixed Adolescent/ Adult	53	42%	65	42%
Coeducational (All)	148	30%	184	38%
Males	87	21%	104	29%
Females	61	43%	80	50%
Gender-Segregated (All)	135	44%	158	45%
Males	91	43%	105	47%
Females	44	48%	53	42%
Discharge Status				
Completed treatment	187	40%	224	42%
Withdrew/ AMA	49	26%	62	40%
Rule Violation	34	29%	40	38%
Other	14	50%	16	50%
Inpatient Length of Stay				
0-14 Days	33	33%	54	54%
15-28 Days	78	32%	109	40%
29-35 Days	94	35%	136	35%
36+ Days	81	43%	123	41%

Table 19B.
Outpatient Program Factors and Prediction of Outcome

	n	Extended Recovery Rate*	n	Recent Abstinence Rate*
Program Factor				
Adolescent Only	55	38%	67	55%
Mixed Adolescent/ Adult	0	-	0	-
Coeducational (All)	39	38%	50	56%
Males	23	39%	30	60%
Females	16	38%	20	50%
Gender-Segregated (All)	2	0%	3	33%
Males	2	0%	3	33%
Females	0	-	0	-
Discharge Status				
Completed treatment	13	54%	15	60%
Withdrew/ AMA	13	31%	15	53%
Rule Violation	7	29%	9	67%
Other	23	35%	29	48%
Outpatient Days				
0-30	19	47%	37	57%
31-60	16	38%	25	56%
60+	18	33%	19	37%

Table 20A.
Parental Participation in Inpatient Treatment

	Extended Recovery Rate		Recent Abstinence Rate		Adolescent Treatment Completion Rate	
Participation in Treatment	n	%	n	%	n	%
Mother						
None	71	31%	82	45%	81	60%
Partial	76	37%	93	39%	91	59%
Full	119	42%	147	43%	145	73%
N/A	19	32%	22	32%	22	68%
Father						
None	116	39%	141	43%	140	66%
Partial	45	36%	52	38%	52	73%
Full	45	49%	54	54%	53	79%
N/A	77	27%	95	33%	92	56%

**Table 20B.
Parental Participation in Outpatient Treatment**

Participation in Treatment	Extended Recovery Rate		Recent Abstinence Rate		Adolescent Treatment Completion Rate	
	n	%	n	%	n	%
Mother						
None	25	44%	30	60%	30	30%
Partial	16	44%	19	58%	19	10%
Full	12	25%	15	40%	15	20%
N/A	1	0%	1	0%	1	0%
Father						
None	33	36%	40	55%	40	25%
Partial	6	50%	7	57%	7	14%
Full	2	50%	2	100%	2	0%
N/A	8	25%	11	36%	11	18%

Table 21A.
Client Satisfaction With Inpatient Treatment and Abstinence

	Extended Recovery Rate		Recent Abstinence Rate	
	n	%	n	%
Effectiveness of Counseling				
Satisfied	202	39%	233	39%
Not Satisfied	56	30%	61	46%
Individual Counseling				
Satisfied	182	41%*	208	40%
Not Satisfied	66	27%*	75	40%
Group Counseling				
Satisfied	208	38%	237	40%
Not Satisfied	50	34%	57	42%
School/ Tutoring Services				
Satisfied	144	39%	167	38%
Not Satisfied	67	31%	75	41%
Family Counseling				
Satisfied	127	40%	141	43%
Not Satisfied	58	31%	68	31%
Opportunity to Talk With Other Clients				
Satisfied	229	37%	261	41%
Not Satisfied	26	42%	31	32%
Overall Satisfaction				
Satisfied	219	41%*	253	41%
Not Satisfied	38	16%*	41	34%

* Difference in % is statistically significant at $p < .05$.

Table 21B.
Client Satisfaction With Outpatient Treatment and Abstinence

	Extended Recovery Rate		Recent Abstinence Rate	
	n	%	n	%
Effectiveness of Counseling				
Satisfied	65	43%	69	52%
Not Satisfied	18	33%	21	52%
Individual Counseling				
Satisfied	55	47%	60	52%
Not Satisfied	18	22%	20	55%
Group Counseling				
Satisfied	59	44%	62	53%
Not Satisfied	20	30%	23	48%
School/ Tutoring Services				
Satisfied	23	56%	24	67%
Not Satisfied	12	25%	12	42%
Family Counseling				
Satisfied	28	46%	29	62%
Not Satisfied	16	44%	17	47%
Opportunity to Talk With Other Clients				
Satisfied	69	42%	75	52%
Not Satisfied	5	40%	6	33%
Overall Satisfaction				
Satisfied	69	42%	73	53%
Not Satisfied	14	36%	17	47%

Table 22A.
Client Inpatient Treatment Ratings

	n	Overall Recovery Rate	n	Recent Abstinence Rate
Length of Treatment				
Much Too Short	12	8%	14	43%
A Little Too Short	71	38%	80	44%
About Right	140	44%	160	39%
A Little Too Long	23	22%	26	31%
Much Too Long	12	25%	15	40%
How Much Treatment Helped				
Not at All	14	7%	15	27%
A Little	32	31%	33	46%
Somewhat	39	31%	44	34%
Quite a Bit	86	37%	104	35%
A Great Deal	88	48%	100	48%

Table 22B.
Client Outpatient Treatment Ratings

	n	Overall Recovery Rate	n	Recent Abstinence Rate
Length of Treatment				
Much Too Short	2	0%	2	50%
A Little Too Short	14	50%	16	50%
About Right	43	44%	45	58%
A Little Too Long	8	12%	10	40%
Much Too Long	12	42%	13	38%
How Much Treatment Helped				
Not at All	4	25%	5	40%
A Little	15	20%	17	59%
Somewhat	12	25%	14	50%
Quite a Bit	31	42%	32	44%
A Great Deal	19	63%	19	63%

Table 23A.
Continuing Care Completion and Recovery Status for Inpatients

	Extended Recovery Rate		Recent Abstinence Rate	
	n	%	n	%
Completed Aftercare Program				
Yes	55	66%	74	61%
No or Still Attending	246	30%	377	37%
Completed One to One Counseling				
Yes	26	38%	35	46%
No or Still Involved	275	36%	416	40%
Completed Family Counseling				
Yes	18	50%	24	50%
No or Still Involved	283	36%	427	40%

Table 23B.
Continuing Care Completion and Recovery Status for Outpatients

	Extended Recovery Rate		Recent Abstinence Rate	
	n	%	n	%
Completed Aftercare Program				
Yes	13	54%	15	60%
No or Still Attending	78	38%	112	50%
Completed One to One Counseling				
Yes	9	67%	10	60%
No or Still Involved	82	38%	117	50%
Completed Family Counseling				
Yes	11	46%	12	50%
No or Still Involved	80	40%	115	51%

Table 24A.
Correlations Between Continuum-of-Care and Recovery Status: Inpatients

	Abstinence During First 6 Months After Treatment	Abstinence During Second 6 Months After Treatment	Abstinence During Third 6 Months After Treatment
AA Attendance			
First 6 Months After Treatment	.40	.24	.21
Second 6 Months After Treatment	.25	.33	.23
Third 6 Months After Treatment	.21	.14	.26
Program Aftercare Involvement			
First 6 Months After Treatment	.19	.16	.14
Second 6 Months After Treatment	.25	.21	.16
Third 6 Months After Treatment	.11	.19	.21
Individual Counseling			
First 6 Months After Treatment	.18	.06	.10
Second 6 Months After Treatment	.06	.07	.10
Third 6 Months After Treatment	.04	.06	.07

Table 24B.
Correlations Between Continuum-of-Care and Recovery Status: Outpatients

	Abstinence During First 6 Months After Treatment	Abstinence During Second 6 Months After Treatment	Abstinence During Third 6 Months After Treatment
AA Attendance			
First 6 Months After Treatment	.11	.05	.08
Second 6 Months After Treatment	.16	.16	.08
Third 6 Months After Treatment	.10	.10	.22
Program Aftercare Involvement			
First 6 Months After Treatment	.01	.03	.08
Second 6 Months After Treatment	.13	.04	.07
Third 6 Months After Treatment	.12	.13	.12
Individual Counseling			
First 6 Months After Treatment	.09	.03	.06
Second 6 Months After Treatment	.13	.14	.06
Third 6 Months After Treatment	.21	.13	.16

Table 25A.
Type and Number of Substances of Dependence and Abstinence: Inpatients

	Extended Recovery Rate		Recent Abstinence Rate	
	n	%	n	%
Substance Dependence				
Alcohol	234	36%	286	41%
Marijuana	230	32%	280	38%
Stimulants	45	24%	49	39%
Hallucinogens	57	33%	62	47%
Cocaine	32	31%	43	49%
# of Substances Abusing or Dependent on				
1	23	48%	24	58%
2	101	40%	125	40%
3	63	29%	76	33%
4 or More	93	33%	112	44%

Table 25B.
Type and Number of Substances of Dependence and Abstinence: Outpatients

	Extended Recovery Rate		Recent Abstinence Rate	
	n	%	n	%
Substance Dependence				
Alcohol	39	36%	46	56%
Marijuana	44	34%	53	55%
Stimulants	3	33%	3	67%
Hallucinogens	7	43%	7	43%
Cocaine	3	67%	3	67%
# of Substances Abusing or Dependent on				
1	3	67%	5	80%
2	24	38%	34	53%
3	16	38%	16	62%
4 or More	13	31%	13	38%

Table 26A.
Outcomes by Demographics, Payment and Referral Source: Inpatients

	Extended Recovery Rate		Recent Abstinence Rate	
	n	%	n	%
Gender				
Male	187	31%	221	37%
Female	114	46%	145	46%
Ethnic Status				
White	220	38%	261	42%
Hispanic/ Latino	22	36%	25	40%
African-American	6	33%	10	20%
Native American	26	23%	34	24%
Asian/ Pacific Islander/ Other	12	42%	16	62%
Court Referred				
Yes	203	35%	243	44%
No	78	40%	92	33%
Age				
<15	73	36%	91	41%
15	76	36%	87	33%
16	62	36%	80	41%
17 and Older	90	39%	108	46%
Medical Coverage				
Medicaid	64	27%	77	32%
State Funds	211	38%	243	42%
Blue Cross/ Blue Shield	30	27%	35	54%
HMO	11	27%	12	17%
Parents/ Self	22	32%	31	39%
Family Income				
<\$10,000	89	34%	108	37%
\$10,001-\$20,000	84	40%	94	42%
\$20,001-\$50,000	64	34%	81	44%
>\$50,000	64	38%	83	41%

Table 26B.
Outcomes by Demographics, Payment and Referral Source: Outpatients

	Extended Recovery Rate		Recent Abstinence Rate	
	n	%	n	%
Gender				
Male	55	47%	63	56%
Female	36	31%	42	48%
Ethnic Status				
White	55	42%	63	51%
Hispanic/ Latino	11	18%	11	36%
African-American	15	53%	20	70%
Native American	2	50%	2	50%
Asian/ Pacific Islander/ Other	8	38%	8	50%
Court Referred				
Yes	55	33%	63	41%
No	26	61%	29	69%
Age				
<15	20	45%	21	57%
15	20	35%	21	43%
16	22	41%	29	52%
17 and Older	29	41%	34	56%
Medical Coverage				
Medicaid	26	42%	28	43%
State Funds	20	45%	22	54%
Blue Cross/ Blue Shield	2	50%	3	33%
HMO	11	46%	12	58%
Parents/ Self	27	44%	29	62%
Family Income				
<\$10,000	16	56%	20	55%
\$10,001-\$20,000	13	23%	16	62%
\$20,001-\$50,000	31	48%	34	53%
>\$50,000	31	32%	35	46%